MEETING AGENDA – APRIL 24, 2018

BOARD ROOM
4000 EAST RIVER ROAD NE
ROCHESTER, MN 55906

4:00 PM

Call to Order

1. Approval of Agenda

2. Approval of Minutes

1. Public Utility Board - Regular Meeting - Mar 27, 2018 4:00 PM

3. Approval of Accounts Payable

1. a/p board listing

4. Recognition - Steve Fiek

NEW BUSINESS

Open Comment Period
(This agenda section is for the purpose of allowing citizens to address the Utility Board. Comments are limited to 4 minutes, total comment period limited to 15 minutes. Any speakers not having the opportunity to be heard will be the first to present at the next Board meeting.)

5. Regular Agenda

1. Audit Presentation – 2017 Annual Audit Results
2. Postpone Water Cost-of-Service Study until 2019

   Resolution: Postpone Water Cost-of-Service Study Until 2019
3. Distributed Generation Interconnect Rules

   Resolution: Distributed Generation Interconnect Rules
4. Involuntary Disconnection Policy

   Resolution: Involuntary Disconnection Policy

6. Consideration Of Bids

1. Vertical Rise Truck Lift

   Resolution: Vertical Rise Truck Lift
2. Rough Terrain Telescoping Forklift

   Resolution: Rough Terrain Telescoping Forklift

7. Informational

1. CSC Building Expansion and Renovation Project - Update
2. Electric Engineering & Operations Report for 2017

8. Board Liaison Reports

1. RPU Index of Board Policies

9. General Managers Report

10. Division Reports & Metrics

11. Other Business

12. Adjourn

The agenda and board packet for Utility Board meetings are available on-line at www.rpu.org and http://rochestercitymn.iqm2.com/Citizens/Default.aspx

MEETING MINUTES – MARCH 27, 2018

BOARD ROOM
4000 EAST RIVER ROAD NE
ROCHESTER, MN 55906

4:00 PM

Call to Order

Attendee Name	Title	Status	Arrived
Mark Browning	Board President	Present	
Tim Haskin	Board Member	Present	
Melissa Graner Johnson	Board Member	Present	
Brian Morgan	Board Member	Present	
Michael Wojcik	Board Member	Present	

1. Approval of Agenda

1. **Motion to:** approve the agenda as presented

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Michael Wojcik, Board Member
SECONDER:	Tim Haskin, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

2. Approval of Minutes

1. Public Utility Board - Regular Meeting - Feb 20, 2018 4:00 PM
2. **Motion to:** approve the Minutes as presented

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Michael Wojcik, Board Member
SECONDER:	Brian Morgan, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

3. Approval of Accounts Payable

1. a/p board listing

   Board Member Michael Wojcik asked what the final budget numbers are looking like at the Westside Energy Station. Director of Power Resources Jeremy Sutton stated that the final payment to the engine supplier, Wartsila, was just made and should reflect in next month's accounts payable. The total project cost to date, he said, is at $66 million.

2. **Motion to:** approve the a/p listing as presented

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Michael Wojcik, Board Member
SECONDER:	Brian Morgan, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

NEW BUSINESS

Open Comment Period

(This agenda section is for the purpose of allowing citizens to address the Utility Board. Comments are limited to 4 minutes, total comment period limited to 15

minutes. Any speakers not having the opportunity to be heard will be the first to present at the next Board meeting.)

President Browning opened the meeting for public comment. One person came forward to speak.

Rick Morris, of Rochester, thanked the Board on behalf of the Sierra Club for all the work they are doing on rates. He requested that RPU staff commit to a 100 percent renewable energy infrastructure plan for 2018 by next month's Board meeting.

4. Consideration Of Bids

1. Bandel Reservoir Storage Tank Repair/Repainting

Water Maintenance and Construction Manager Cary Johnson presented a request to the Board to approve a contract for the repair and repainting of the Bandel Reservoir water storage tank in 2018. Seven bids were received and M.K. Painting was the low bidder at $239,500. Work is planned to be completed by July 1, 2018 if possible, or started after August 31, 2018 and completed no later than November 2, 2018, and will consist of finish repair including removal of the cathodic protection system, and repainting.

Any additional hourly rates that may be needed for welding, grinding, power tool cleaning, seam sealing and caulking beyond the estimated number of hours may increase the contract amount and will be managed through staff approval and authorization. The 2018 water maintenance and construction budget includes $235,000 for this project.

Mr. Johnson added that M.K. Painting has performed satisfactory work for RPU in the past, and the storage tank will be painted in the same sahara color that has been used on other tanks.

Resolution: Bandel Reservoir Storage Tank Repair/Repainting

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Michael Wojcik, Board Member
SECONDER:	Tim Haskin, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

5. Regular Agenda

1. Standby Electric Service and License Agreement (Rochester Campus)

Key Accounts Representative Dru Larson presented a request to the Board to approve two license agreements with Rochester Campus, new owners of the IBM site, for each of the RPU-owned generators there. The agreements will take effect retroactive to February 22, 2018, the date Rochester Campus LLC closed on the property.

Mr. Larson said the license agreements and costs are essentially the same as the previous agreements with IBM, and will provide standby electric service for system load-serving purposes. The IBM campus owners will lease the two diesel generators on a monthly basis from RPU at a fixed charge of $3,175 for a term of

five years, to include the operation, maintenance and administration of the generators, plus a fuel consumption charge.

Resolution: License and Standby Electric Service Agreements (Rochester Campus)

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Brian Morgan, Board Member
SECONDER:	Tim Haskin, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

2. Microsoft Enterprise Agreement License Renewal

A request to approve the Microsoft Enterprise Agreement (EA) License was presented by IS Manager Phil Teng. The Board had previously approved an EA license agreement in January 2018, however Office 365 was not included in the package. RPU was directed by the City IT integration committee to migrate to Office 365 in an effort by the City to standardize the IT platform citywide. The new license package, offered through SHI International Corp, includes Office 365 and Enterprise Mobility and Security (EMS), at an estimated additional cost of $85,532.40, for three years, and allows for additional licenses to be added in the future.

Resolution: Microsoft Enterprise Agreement License Renewal

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Melissa Graner Johnson, Board Member
SECONDER:	Michael Wojcik, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

3. Annual Update of Cost and Rate Schedules for Cogeneration & Small Power Production (SPP) Rate Tariff

Senior Financial Analyst Mike Heppelmann presented a request to the Board to approve the Cost and Rate Schedules for Cogeneration and Small Power Production (SPP) Tariff for 2018. RPU is required to update the tariff annually per Minnesota Statute 216B.164. Schedule C of the tariff was updated to include an increase in the rate paid to SPP customers.

Resolution: Annual Update of Cost and Rate Schedules for Cogeneration & SPP Rate Tariff

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Melissa Graner Johnson, Board Member
SECONDER:	Brian Morgan, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

4. Board Organization Policy

The revised Board Organization policy was presented to the Board for approval. The policy had been brought to the Board last month, and recommended changes were made. The changes have also been approved by the City Charter Commission. The policy was revised to change the election of Board officers to the May meeting, and adds the office of Vice President.

President Browning asked that an additional change be made to the policy, in the last sentence of policy statement number 2, to state "The Board's President, Vice

President and Secretary shall take office upon adjournment of the meeting when elected..." Board Member Michael Wojcik made the motion to incorporate the change; motion carried.

The change was made to the policy following the meeting.

Resolution: Board Organization Policy

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Michael Wojcik, Board Member
SECONDER:	Melissa Graner Johnson, Board Member
AYES:	Browning, Haskin, Johnson, Morgan, Wojcik

6. Informational

1. Distributed Generation Interconnect Rules - Information Only

Senior Electrical Engineer Steve Cook shared with the Board that the Minnesota Municipal Utility Association (MMUA) has provided a template to assist municipals in complying with state statute for Distributed Generation Interconnect Rules. The template aims to make the rules of members across the state consistent with one another.

Mr. Cook stated that consistency in documentation with other municipal utilities within the state is of benefit to RPU and its customers, and provided a draft copy of RPU's rules and associated schedules to the Board for review. This item will be brought back to the Board at the April 24, 2018 meeting for approval.

2. Involuntary Disconnection Policy

Last month, staff presented the revised Involuntary Disconnection policy to the Board for review. The policy was brought back to the Board this month with provisions added to include payment arrangements for active duty military personnel per state statute 325E.028.

As per the suggestion of Board Member Michael Wojcik, General Manager Mark Kotschevar said the policy will be posted on the RPU website to allow for public comment. President Browning stated that some of the requirements in the policy seem redundant. Mr. Kotschevar said the policy was revised to restate verbatim from the state statutes.

Mr. Kotschevar asked that any comments regarding the policy be sent to him.

The Board also discussed posting all of the Board policies on the RPU website for reference.

7. Board Liaison Reports

As a follow up to the February financial audit of the utility by Baker Tilly Virchow Krause, President Browning of the Board's audit committee shared that it was a clean audit. Representatives from Baker Tilly Virchow Krause will return next month to present their audit report to the Board.

Board Members Tim Haskin and Brian Morgan of the strategic planning committee have identified some strategic planning focus topics which they shared with the Board members. They plan to focus their work on the following: investigating the industry average of infrastructure cost versus customer charge, the parameters of RPU's agreement with the Southern Minnesota Municipal Power Association (SMMPA) between now and 2030 when RPU's contract with SMMPA expires, timelines for implementation of a smart meter program, expansion of renewable energy options, energy cost reduction methods and options, increased electric vehicle usage in personal, mass transit and freight transportation, and the move to LED streetlights and methodologies to reduce urban light pollution. President Browning said a goal of the Board is to confirm the infrastructure cost in the RPU customer charge is appropriate. General Manager Mark Kotschevar stated that some of these topics tie into RPU's infrastructure plan; an update of the infrastructure plan is planned for 2019, he said, but is not within this year's budget. A couple of different renewable energy scenarios will be included in the plan.

Mr. Haskin noted that the list of strategic planning focus topics is a two-year list of discussion points. Mr. Morgan added that this is only a partial list.

Board Member Michael Wojcik thanked Mr. Haskin and Mr. Morgan for their fantastic work. He stated his own personal target is to reduce the RPU customer charge by $8.30 per month. He stated that a carbon-free scenario would be his preference. Mr. Wojcik asked if the street lighting and over-lighting is controlled by Public Works and if they own the infrastructure? Mr. Kotschevar explained that RPU owns the infrastructure but Public Works owns the design of the lighting pattern. Mr. Wojcik said he supports motion-sensored street lighting, or reduced street lighting at certain times.

Mr. Wojcik continued the discussion saying he believes rates and street lighting are the two most significant topics. He added that it would be nice if RPU could work with SMMPA on the electrification of vehicle fleets and home heating. Mr. Kotschevar stated that SMMPA is currently working to offer incentive rates for some of these initiatives. Mr. Kotschevar proposed that a summer Board study session with RPU staff regarding these topics may be beneficial.

President Browning pointed out that home furnaces are already 95 percent efficient, and asked what the advantage would be to exploring alternatives. Mr. Wojcik pointed to geothermal and air source heating options, which draw energy from the ground or air. President Browning remarked that more discussions are needed with Public Works regarding street light standards. Mr. Kotschevar stated that an ideal time for these discussions to take place will be when a new director of Public Works is hired in July.

RPU has an existing 2018-2020 Strategic Overview plan and would like to meld these topics into the plan to ultimately have just one document, said Mr. Kotschevar. He will send the current plan to the Board.

The next Board policy in line for revision is the Electric Metering policy, to be reviewed by the Board's operations and administration committee.

8. General Managers Report

General Manager Mark Kotschevar reported that the utility is starting to see the evolution of point/reward credit cards being used by commercial customers to pay their electric bills, resulting in monthly processing fees to RPU. One customer alone is costing RPU $4,500 per month in fees. The Board may soon be faced with a decision regarding the use of these cards, he said. If customers are using them, said President Browning, the utility can't be taking a hit for

it. RPU may want to consider placing a service charge on the use of these cards, suggested Board Member Michael Wojcik. The utility will need to look at this on a broader scale, said Corporate Services Director Peter Hogan, and may possibly offer incentives for electronic bill payment.

Mr. Kotschevar shared that he met with Rick Morris, clean energy organizer of the Sierra Club, and the St. Vincent de Paul Society to discuss implementing a roundup program to help low income folks.

Mr. Kotschevar reported that the Westside Energy Station went commercial on March 20, 2018, and got called on the very next day, and has been called on regularly since. It seems to be efficient enough to be valuable to Midcontinent Independent System Operator (MISO), and staff is generally pleased with the operation of the plant so far.

Mr. Kotschevar, Mr. Hogan and President Browning met with a representative from Cayenta to discuss the status of the delayed implementation of the utility's new customer care system on March 8, 2018. Cayenta made a commitment to RPU to provide key deliverables by the end of March, said Mr. Hogan. The project seems to be on track, and the next few weeks will be critical to the project schedule, Mr. Hogan stated. President Browning pointed out that RPU will have this system for the next 20 years, making it a long-term commitment, and right now Cayenta's failure to meet schedule is costing RPU money. The Board will continue to track the progress.

Mr. Kotschear discussed ongoing service territory negotiations with Peoples Co-Op and asked for input from the Board. He will follow up with the Co-Op.

Mr. Kotschevar congratulated RPU's water department, where three distribution employees passed tests for class C, class B and class A. The utility now has a new class A operator.

Mr. Wojcik informed the Board that the Rochester Public Library will be hosting an iMatter Youth Clean Electricity Summit on April 14, 2018 at which Mayor Ardell Brede will speak, and stated that RPU should have some representation at the event. Mr. Wojcik also stated that Grand Marais Mayor Jay Arrowsmith DeCoux is advocating climate preparedness and recently supported the iMatter group's Youth Climate Report Card by passing a Climate Inheritance Resolution, planning to initiate a climate action plan to reduce his community's greenhouse gas emissions. He expects the agenda of the Rochester meeting to be similar.

Another issue Mr. Wojcik raised is Russian interference with the power grid, RPU's resistance to such threat, and its ability to recover from a digital attack. He requested a report on the precautions taken by the utility to ensure no one can take control of the power system. Mr. Hogan replied that RPU's SCADA network is very restrictive and very controlled, but will provide a report to Mr. Wojcik at a later date.

9. Division Reports & Metrics

Corporate Services Director Peter Hogan pointed out that the financial dashboard graphs for 2017-2018 retail gross margin, change in net position, cash reserves and debt coverage ratio for the electric utility and water/steam had been revised prior to the meeting, and hard copies were distributed to the Board members.

Board Member Brian Morgan asked about the nature of an OSHA recordable injury that was reported in February. Director of Compliance and Public Affairs Steven Nyhus stated that it was due to a slip and fall on the ice. Due to the spike in ice-related injuries this winter, RPU has been taking measures to educate employees on prevention.

10. Other Business

11. Adjourn

The agenda and board packet for Utility Board meetings are available on-line at www.rpu.org and http://rochestercitymn.iqm2.com/Citizens/Default.aspx

Submitted by:

_____
Secretary

Approved by the Board

_____
Board President

_____
Date

ACCOUNTS PAYABLE

Meeting Date: 4/24/2018

SUBJECT: a/p board listing

PREPARED BY: Terri Engle

Please approve

ROCHESTER PUBLIC UTILITIES
A/P Board Listing By Dollar Range
For 03/09/2018 To 04/09/2018
Consolidated & Summarized Below 1,000

Greater than 50,000 :

SOUTHERN MN MUNICIPAL POWER A	March SMMPA Bill	7,225,385.98
SOUTHERN MN MUNICIPAL POWER A	February SMMPA Bill	7,182,312.74
WARTSILA NORTH AMERICA	Reciprocating Engines-Completion of Punch List	1,282,609.70
MN DEPT OF REVENUE	February Sales & Use Tax	607,865.21
KNUTSON CONSTRUCTION SERVICES	Service Center Expansion Labor	524,585.00
CONSTELLATION NEWENERGY-GAS D	February Gas for SLP	296,258.20
WESTSIDE ENERGY PARTNERS	Release Partial contract retainage WES	234,105.70
MIDCONTINENT ISO INC	Network upgrade cost milestone 4 WES	204,600.00
STUART C IRBY CO INC	20,916 ft-Wire, AL, 15kV, 750 Str, 1/C, 220 Jacket	157,026.60
STUART C IRBY CO INC	68,043 ft-Wire, AL, 15kV, 1/0 Solid, 1/C, Jacketed	132,638.26
CONSTELLATION NEWENERGY-GAS D	February Gas for CC	89,014.01
BORDER STATES ELECTRIC SUPPLY	480-Meter, FM2S CL200 240V 2WAY W/Disconnect	71,820.00
WAL-MART STORES, INC.	Lighting-CIP Conserve & Save Rebates	60,429.08
SANCO EQUIPMENT LLC	Bobcat 5600 toolcat	60,089.90
BORDER STATES ELECTRIC SUPPLY	132-Meter, FM4S CL20 MRV 2-Way	55,836.20
WRIGHT TREE SERVICE INC	2018 Hourly Tree Trimming~	53,729.96
	Price Range Total:	18,238,306.54

5,000 to 50,000 :

CITY OF ROCHESTER	Workers Comp Payments	41,473.06
ELCOR CONSTRUCTION INC	Cascade Creek Foundations	37,107.00
COMPUTER TASK GROUP INC	Project Coordinator for Cayenta Project	35,122.50
VIKING ELECTRIC SUPPLY INC	1,000-Photocontrol, 120V-305V	34,200.00
MAYO FOUNDATION	Lighting & VSD -CIP Conserve & Save Rebates	33,639.38
U S ALLIANCE GROUP	March CC Fees	30,524.04
ALL SYSTEMS INSTALLATION dba	PA speaker install/program	30,229.50
VISION COMPANIES LLC (P)	Org Strategy, Leadership Journey, Offsite Expenses	29,850.00
WORKS COMPUTING INC	VMware Vsphere Renewal & Upgrade	29,575.79
FRONTIER PRECISION INC	GNSS unit - survey gps replacement	28,888.90
MN DEPT OF COMMERCE	Q4 FY 2018 Indirect Assessment	27,968.85
ZIEGLER INC	2018 Customer Support Agreement -IBM DGs	27,253.80
SPARTA CONSULTING INC	2017-18 SAP Application Support~	25,280.00
STUART C IRBY CO INC	2-Trans, PM, 3ph, 500kVA, 13.8/8, 208/120	24,758.00
BENCHMARK ELECTRONICS INC	lighting-CIP Conserve & Save Rebates	24,005.63
THE ENERGY AUTHORITY INC	TEA Resource Fee	22,776.24
SCHUMACHER ELEVATOR COMPANY	Freight Elevator Repair SLP	21,480.00
W W GOETSCH ASSOCIATES	2-Booster pump	21,200.00
TRENCH LTD	2-CVT, Outdoor, 161kV 1400/800:1 Meter Acc	21,054.38
BAKER TILLY VIRCHOW KRAUSE LL	2017 Audit Fees	19,598.00
STUART C IRBY CO INC	3-Trans, PM, 3ph, 150kVA, 13.8/8, 208/120	19,218.00
BLUESPIRE STRATEGIC MARKETING	2016 - 2019 RPU Plugged In Contract	18,227.00
PAX CHRISTI	Pax Christie Easement 41 Street NW	18,089.70
WORKS COMPUTING INC	2018 HP Foundation Care Support	16,861.33
ALL SYSTEMS INSTALLATION dba	Fiber termination	16,167.00
STUART C IRBY CO INC	2-Trans, PM, 3ph, 225kVA, 13.8/8, 208/120	15,782.00
CENTURYLINK	2018 Monthly Telecommunications	13,741.86
CRESCENT ELECTRIC SUPPLY CO	6,000 ft-Wire, AL, 600V, 350-4/0 NEU YS Tri Urd	13,355.36
ZIEGLER INC	IBM Genset #2 Extended Warranty (3 yrs)	13,285.00
ZIEGLER INC	IBM Genset #1 Extended Warranty (3 yrs)	13,285.00
PETERSON WELL DRILLING INC	Well Closing SLP	12,830.00
VIKING ELECTRIC SUPPLY	Lighting-CIP Conserve & Save Rebates	12,766.50
BARR ENGINEERING COMPANY (P)	Roch Groundwater Model Update	12,733.50
McGRANN SHEA CARNIVAL STRAUGH	Q1 Legislative	12,500.00

ROCHESTER PUBLIC UTILITIES
A/P Board Listing By Dollar Range
For 03/09/2018 To 04/09/2018
Consolidated & Summarized Below 1,000

58	eCOMPLIANCE MGMT SOLUTIONS IN	2018 Field Inspection Software	11,756.26
59	MINNESOTA ADULT AND TEEN CHAL	Lighting-CIP Conserve & Save Rebates	11,510.28
60	ABRASIVES INC	Pressure blaster cabinet	11,090.00
61	PEAKER SERVICES INC	Valve overhaul	10,558.00
62	WESTSIDE ENERGY PARTNERS	Sub contractors & Direct Construction Cost WES	10,529.57
63	N HARRIS COMPUTER CORP	Travel for Cayenta Implementation Serv	10,158.26
64	WELLS FARGO BANK ACCT ANALYSI	2018 Banking Services	8,898.43
65	CPMI INC	Design of Construction project at Service Center	8,725.00
66	CHS ROCHESTER	March Fuel	8,514.80
67	UTILITY FINANCIAL SOLUTIONS L	Development of Streetlight Rate Alternat	8,448.75
68	SPECTRUM REACH	Tips from Tony scams ad	8,410.00
69	RSP ARCHITECTS LTD.	Service Center Expansion project	8,316.00
70	HAWK & SON'S INC	Transformer replacement	7,925.00
71	BADGER METER INC (P)	48-HRE Badger M-35 100W Itron ERT Integral	7,910.40
72	CENTRAL MINNESOTA MUNICIPAL P	February Capacity Sales	7,600.00
73	RANFRANZ & VINE FUNERAL HOME	Lighting & Cooling -CIP Conserve & Save Rebates	7,536.60
74	ULTEIG ENGINEERS INC	Cascade Creek Sub Transformer Replace	7,025.00
75	UTILITY FINANCIAL SOLUTIONS L	Rate Design Alternatives - Board Study Session	6,785.12
76	KERRY	VSD-CIP Conserve & Save Rebates	6,625.00
77	STATES MANUFACTURING CORP	1-DC panelboard	6,425.00
78	RESCO	100-Mast Arm, Residential LED, Extension	6,401.81
79	PERFECTION PLUS	Custodial Services	6,389.66
80	TWIN CITY SECURITY INC	2018 Security Services	6,307.50
81	CITY OF ROCHESTER	City Attorney Services	6,250.00
82	STUART C IRBY CO INC	96-Pedestal Dome Cover, Box Style	6,240.00
83	ALL SYSTEMS INSTALLATION dba	Access control renovation/remodel	6,190.35
84	SYSTEM OPERATIONS SUCCESS INT	Custom Online Bundle Courses	6,000.00
85	STUART C IRBY CO INC	96-Pedestal Base, Secondary, w/o Cover	5,760.00
86	RESURRECTION EVANGELICAL LUTH	Lgihting-CIP Conserve & Save Rebates	5,647.60
87	DELL MARKETING LP	Latitude 12 laptop 7214	5,572.54
88	IBM CORP	Customer Refunds High Load Factor Credit	5,550.50
89	ELITE CARD PAYMENT CENTER	Registration Fee F Peterson SANS	5,380.00
90	CHRIST UNITED METHODIST CHURC	Lighting & Cooling-CIP Conserve & Save Rebates	5,349.18
91	BORDER STATES ELECTRIC SUPPLY	5-Meter, FM9S With Ethernet	5,343.75
92	RESCO	33-CT Bar Type 600/5 RITZ	5,313.00
93	CONSTELLATION NEWENERGY-GAS D	February Gas for WES	5,029.05
94			
95		**Price Range Total:**	1,042,299.73
96			
97	**1,000 to 5,000 :**		
98			
99	ELITE CARD PAYMENT CENTER	Registration FeeJFolkert SANS	4,980.00
100	VERIZON WIRELESS	2018 Cell & IPad Monthly Service	4,933.90
101	HOME FEDERAL SAVINGS BANK	Lighting-CIP Conserve & Save Rebates	4,855.00
102	KENNEDY & GRAVEN CHARTERED	Revision of RPU Investment-Debt Serv Reserve	4,726.85
103	MARSDEN BLDG MAINT LLC dba	Bldg Cleaning	4,658.17
104	VERTEX US HOLDINGS INC	Consulting Services for Data Migration	4,654.80
105	BRAUN INTERTEC CORPORATION	Geotechnical Services Pumphouse #26	4,530.00
106	MAYO CLINIC	Lighting-CIP Conserve & Save Rebates	4,463.00
107	ULINE	Shelving WES	4,435.31
108	CREDIT MANAGEMENT LP	2018 Collections/Delinquent Services	4,400.00
109	CITY OF ROCHESTER	Work Comp Pmts	4,145.01
110	BADGER METER INC (P)	24-HRE Badger M-70 100W Itron ERT Integral	4,073.76
111	IHEART MEDIA dba	Tips from Tony Scams ad	4,002.00
112	ELECTRIC PUMP INC (P)	2-Variable Frequency Drive	3,986.00
113	MINNESOTA ENERGY RESOURCES CO	Feb Gas SLP	3,953.67
114	ASSEMBLY OF GOD CHURCH	Lighting-CIP Conserve & Save Rebates	3,903.47

ROCHESTER PUBLIC UTILITIES
A/P Board Listing By Dollar Range
For 03/09/2018 To 04/09/2018
Consolidated & Summarized Below 1,000

115	STUART C IRBY CO INC	50-Cutout, 15KV, 100A, NLB, Poly	3,895.00
116	MIDWEST FUELS	Fuel Oil, IBM Gen-Set #2	3,864.48
117	CENTER FOR ENERGY AND ENVIRON	Rate Design Proposal	3,820.00
118	BRADEN MANUFACTURING LLC	120-Filter, Prefilter	3,787.22
119	TSP INC	Construction and Bidding Documents	3,735.50
120	DAKOTA SUPPLY GROUP	12-Luminaire, 108W LED, PC 120-277V, Black	3,667.95
121	BADGER METER INC (P)	24-Meter, Bare 1" Badger Disk	3,592.03
122	WESCO DISTRIBUTION INC	9-Elbow, 15kV, 600A,NLB,500MCM CU/AL Comp	3,591.00
123	BANKS JOSHUA C	Photos of RPU events	3,420.00
124	ALL SYSTEMS INSTALLATION dba	Low Voltage SC Expansion Contract	3,418.40
125	CHS ROCHESTER	March Fuel	3,358.09
126	EPLUS TECHNOLOGY INC	10-IP Phone 8845	3,248.80
127	CRW ARCHITECTURE + DESIGN GRO	Construction Services Wellhouse #26	3,200.00
128	EXPRESS SERVICES INC	2018 Temp Staff Marketing (2)	3,187.27
129	KEMPS, LLC	Cooling-CIP Conserve & Save Rebates	3,150.00
130	CONSOLIDATED COMMUNICATIONS d	17-19 Network and Collocation Services	3,130.02
131	STATES MANUFACTURING CORP	1-DC fused panelboard, 34 circuit	3,110.00
132	STUART C IRBY CO INC	4,000 ft-Wire, 10 ga, 600V 2/C Cntrl CB EPR TC	3,095.10
133	WESCO DISTRIBUTION INC	1-Switch, Air, Unit Top, 3ph, 900A, LB	2,990.00
134	MINNESOTA ENERGY RESOURCES CO	2/19-3/12/18 Gas for SC	2,987.68
135	EAGLES CLUB ROCHESTER	Damage Prevention Seminar	2,939.62
136	D P C INDUSTRIES INC	2018 Carus 8500 Aqua Mag F35	2,883.50
137	BOB'S AUTO BODY	Lighting-CIP Conserve & Save Rebates	2,821.00
138	EXPRESS SERVICES INC	2018 Seasonal staff grounds	2,820.00
139	INSTITUTE FOR ENVIRONMENTAL	2018 Asbestos Consulting Services	2,812.56
140	CRESCENT ELECTRIC SUPPLY CO	8,000 ft-Wire, Copper, 600V, 12-2 Solid w/Grd, UF	2,765.07
141	PITNEY BOWES GLOBAL FIN SVCS	Inserter and Mailing System Lease	2,759.65
142	ITRON INC	MVWeb	2,754.00
143	MIDWEST FUELS	Fuel Oil, IBM Gen-Set #1	2,710.86
144	KAHLER GRAND HOTEL	Lighting-CIP Conserve & Save Rebates	2,698.65
145	OLMSTED COUNTY	Lighting-CIP Conserve & Save Rebates	2,665.51
146	CANADIAN HONKER RESTAURANT &	2017 Employee compliance training lunche	2,658.52
147	PROCESS MEASUREMENT CO	2-Analog hand cranked insulation tester	2,508.00
148	STUART C IRBY CO INC	2-Trans, PM, 1ph, 15kVA, 13.8/8, 240/120	2,506.00
149	WESCO DISTRIBUTION INC	50-Fuse Holder, Straight Line, Breakaway	2,454.50
150	D P C INDUSTRIES INC	2018 Chlorine, 150 lb Cyl	2,348.25
151	KIMLEY HORN AND ASSOCIATES IN	Service Center SE driveway modifications	2,323.92
152	NETWORKFLEET INC	2018 Monthly Charge - GPS Fleet Tracking	2,298.43
153	NEW ERA DEVELOPMENT THREE, LL	Lighting-CIP Conserve & Save Rebates	2,281.96
154	D P C INDUSTRIES INC	2018 Hydrofluorosilicic Acid - Delivered	2,239.38
155	SYSTEM OPERATIONS SUCCESS INT	Systems Operations Program	2,222.50
156	RESCO	18-Junction, LB, 200A, 4 Pos, w/Strap	2,205.00
157	STUART C IRBY CO INC	10,000 ft-Wire, Tracer, Orange, #12, CCS	2,200.00
158	CRESCENT ELECTRIC SUPPLY CO	50-Conduit, Flexible, Corrugated PVC, 3.00	2,156.00
159	MIDCONTINENT ISO INC	March MISO Invoice	2,131.37
160	ANCOM COMMUNICATIONS INC	18 Enventide Voice Recorder Svc Contract	2,100.00
161	ROCH TOOL & DIE INC	Cascade Creek-Panel Covers & Modificatio	2,097.96
162	WESCO DISTRIBUTION INC	2-Metal Sec. Encl, 3ph, 30"x78"x22" 600Amp	2,050.00
163	CORE & MAIN LP (P)	10-WB67 Breakoff Flange Kit, K528	2,040.00
164	TTK PROPERTIES	Lighting-CIP Conserve & Save Rebates	2,020.00
165	ADVANTAGE DIST LLC (P)	Bulk Oil	2,017.90
166	VIKING ELECTRIC SUPPLY INC	50-Tape, Vinyl, .750" x 66' 3M Super +66	2,003.91
167	IHEART MEDIA dba	Tips from Tony Scams Ad	2,001.00
168	RESCO	50-Crossarm, Wood, 8' HD	1,974.00
169	CRW ARCHITECTURE + DESIGN GRO	Structural Analysis Hydro Dam	1,972.50
170	VICTORY BAPTIST CHURCH	Cooling-CIP Conserve & Save Rebates	1,950.00
171	OPEN ACCESS TECHNOLOGY	OATI Services for Current Month	1,950.00

ROCHESTER PUBLIC UTILITIES
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172	STUART C IRBY CO INC	6-Fuse End Fitting, SML-20, For SMU-20	1,920.00
173	BAKER TILLY VIRCHOW KRAUSE LL	2017 FERC Review	1,892.00
174	STUART C IRBY CO INC	1-Trash pump, 3"	1,845.00
175	EXPRESS SERVICES INC	Seasonal warehouse temp	1,804.80
176	ELITE CARD PAYMENT CENTER	Registration Fee APPA Conference Mark K	1,770.00
177	U S A SAFETY SUPPLY	6-Headset, radio powered communications	1,757.64
178	WESCO DISTRIBUTION INC	12-Conn, Trans, 1/0-1000, 12-Tap, Bare	1,667.28
179	LARSON KENT	Cust Refunds 3*549346-cust paid wrong amount in error	1,623.09
180	PETERSON FRANK	Frank P Advance-SANS ICS Trng, Orlando	1,614.56
181	EPLUS TECHNOLOGY INC	2018 Network maintenance services	1,590.00
182	ADVANTAGE DIST LLC (P)	Drums of hydrolic oil	1,581.03
183	CRESCENT ELECTRIC SUPPLY CO	2,000 ft-Wire, 10 ga, 600V 2/C Cntrl CB EPR TC	1,571.06
184	ONLINE INFORMATION SERVICES I	2018 Utility Exchange Report	1,570.08
185	VIKING ELECTRIC SUPPLY INC	500 ft-Conduit, Flexible, Corrugated PVC, 3.00	1,564.95
186	RESCO	50-Arrester, 10kV, Dist, Riser MOV	1,542.50
187	AEE ENERGY SEMINARS INC	Business Energy Professionals Training for Anna	1,495.00
188	CROSSROADS VISION	Lighting-CIP Conserve & Save Rebates	1,494.00
189	USIC LOCATING SERVICES INC	2018 Locating Services	1,466.86
190	EASYPOWER LLC	2018-21 Arc Flash SoftwareMaint	1,456.80
191	BORDER STATES ELECTRIC SUPPLY	60-Elbow, 15kV, 200A, LB,1/0 Sol,175-220Mil	1,443.00
192	BOLTON AND MENK (P)	Verizon Willow ROC011 Site Review~	1,440.00
193	BARR ENGINEERING COMPANY (P)	Wellhead protection plan amendment	1,428.00
194	ABRASIVES INC	Turntable, 30" fixed base, manual	1,420.00
195	STUART C IRBY CO INC	36-Gloves, Leather Work, Hvy Duty, Large	1,415.88
196	ELITE CARD PAYMENT CENTER	Registration Fee J Boldt Mega Seminars W	1,400.00
197	RESCO	CT Bar Type 600/5 Small Bar RITZ	1,380.00
198	ELITE CARD PAYMENT CENTER	WES Furniture	1,376.55
199	SY VAN	Travel,NERC/CIP Trng,Orlando FL,Lodging	1,357.85
200	McGRANN SHEA CARNIVAL STRAUGH	Guidance on credit & collections policies	1,347.50
201	BAIER GERALD	2018 Sweeping Services Jan-December	1,326.00
202	CLAREY'S SAFETY EQUIPMENT dba	Vehicle hitch mount sleeve	1,325.00
203	POMPS TIRE SERVICE INC	Tires-4	1,322.51
204	PETERSON FRANK	Travel, SANS Trng, Orlando,FL, Lodging	1,301.00
205	ULINE	Workbench,Starter Table & Shelf	1,300.67
206	K A A L TV LLC	Tips from Tony Scam Ad	1,300.00
207	MINNESOTA ENERGY RESOURCES CO	Feb Gas-CC	1,293.47
208	INNER TITE CORP	120-Meter, Jiffy Lock Side Mount	1,289.99
209	ALL SYSTEMS INSTALLATION dba	WES/SLP emergency door release install	1,283.00
210	EPLUS TECHNOLOGY INC	UC manager-10 enhanced user license	1,268.07
211	MINNESOTA ENERGY RESOURCES CO	January Gas for WES Bldg	1,266.07
212	ULINE	Cantilever Rack & Wall Mount Shelving	1,262.19
213	VIKING ELECTRIC SUPPLY INC	Wire, Copper, 600V, #6 Str, XLP	1,256.81
214	COULEE BANK	Lighting-CIP Conserve & Save Rebates	1,252.00
215	ROCHESTER PET AND COUNTRY	Lighting-CIP Conserve & Save Rebates	1,242.00
216	WELLS FARGO BANK ACCT ANALYSI	2018 Lockbox Fee	1,210.00
217	MINNESOTA ENERGY RESOURCES CO	February Gas WES Bldg	1,200.47
218	TRI STATE BUSINESS	Cooling-CIP Conserve & Save Rebates	1,125.00
219	AMARIL UNIFORM COMPANY	10-FR hi-vis t-shirt	1,120.00
220	BOLTON AND MENK (P)	Verizon Apache Mall ROC010 Site Review~	1,120.00
221	ROCHESTER ARMORED CAR CO INC	2018 Pick Up Services	1,104.40
222	RESCO	Cutout Door, 6A ELF, 15KV	1,101.90
223	PROGRESSIVE TRUCK BODY REPAIR	Auto repair - 2012 toyota - LABOR	1,098.00
224	SARGENTS LANDSCAPE NURSERY	Lighting-CIP Conserve & Save Rebates	1,086.92
225	ELITE CARD PAYMENT CENTER	Food Handlers Certification-40	1,081.25
226	SELCO	Lighting-CIP Conserve & Save Rebates	1,080.00
227	VIKING ELECTRIC SUPPLY INC	Cable Support Bracket, 36"	1,080.00
228	ELITE CARD PAYMENT CENTER	Hotel for APPA Conference - Mark K	1,077.30

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229	DELL MARKETING LP	Docking station w/power supply	1,069.82
230	J J KELLER & ASSOCIATES INC	1 year license 6/1/18-5/31/19	1,063.41
231	J J KELLER & ASSOCIATES INC	Prof License 1 year	1,063.41
232	ON SITE SANITATION INC	2018 Toilet Rental Services	1,052.81
233	ULINE	WES locker room Bench	1,031.35
234	HAWKINS INC	Caustic Soda (SLP) 51 Gallon Drums	1,030.17
235	TEREX UTILITIES INC	2018 Aerial and Digger Inspections	1,030.00
236	BORDER STATES ELECTRIC SUPPLY	Pedestal Repair Kit	1,024.40
237	VIKING ELECTRIC SUPPLY INC	Fuse, 3A, KLK/KLM, 600V, Cartridge	1,003.20
238	MINNESOTA ENERGY RESOURCES CO	February Gas for WES	1,000.08
239	MAYO EMPLOYEES CREDIT UNION	VSD-CIP Conserve & Save Rebates	1,000.00
240			
241		**Price Range Total:**	316,669.10
242			
243	**0 to 1,000 :**		
244			
245	EXPRESS SERVICES INC	Summarized transactions: 21	15,506.97
246	ELITE CARD PAYMENT CENTER	Summarized transactions: 104	11,488.80
247	REBATES	Summarized transactions: 35	11,237.49
248	Customer Refunds (CIS)	Summarized transactions: 90	10,758.08
249	TEREX UTILITIES INC	Summarized transactions: 15	7,243.90
250	VIKING ELECTRIC SUPPLY INC	Summarized transactions: 72	7,061.26
251	BORDER STATES ELECTRIC SUPPLY	Summarized transactions: 29	6,216.66
252	LAWSON PRODUCTS INC (P)	Summarized transactions: 19	4,674.56
253	CRESCENT ELECTRIC SUPPLY CO	Summarized transactions: 50	4,290.18
254	STUART C IRBY CO INC	Summarized transactions: 27	3,583.92
255	GRAINGER INC	Summarized transactions: 20	3,319.80
256	ALL SYSTEMS INSTALLATION dba	Summarized transactions: 9	3,250.32
257	WESCO DISTRIBUTION INC	Summarized transactions: 13	3,135.81
258	ELITE CARD PAYMENT CENTER	Summarized transactions: 9	2,809.01
259	DELL MARKETING LP	Summarized transactions: 11	2,476.99
260	CORE & MAIN LP (P)	Summarized transactions: 6	2,221.04
261	ULINE	Summarized transactions: 11	2,015.83
262	DAVIES PRINTING COMPANY INC	Summarized transactions: 11	1,820.62
263	JACKSON SIDNEY	Summarized transactions: 3	1,806.79
264	FRONTIER PRECISION INC	Summarized transactions: 2	1,702.26
265	BENSON ANTHONY	Summarized transactions: 5	1,681.65
266	TRUCKIN' AMERICA	Summarized transactions: 4	1,635.19
267	EASYPOWER LLC	Summarized transactions: 3	1,580.40
268	INNOVATIVE OFFICE SOLUTIONS L	Summarized transactions: 9	1,559.07
269	MCMASTER CARR SUPPLY COMPANY	Summarized transactions: 32	1,451.12
270	DZUBAY TONY	Summarized transactions: 4	1,390.65
271	METRO SALES INC	Summarized transactions: 2	1,327.36
272	U S A SAFETY SUPPLY	Summarized transactions: 10	1,240.16
273	WARNING LITES OF MN INC	Summarized transactions: 8	1,232.74
274	ADVANCE AUTO PARTS	Summarized transactions: 35	1,193.51
275	CONCAST INC	Summarized transactions: 3	1,065.14
276	AUTHORIZE.NET	Summarized transactions: 1	987.65
277	OPEN ACCESS TECHNOLOGY	Summarized transactions: 1	987.05
278	FIRST CLASS PLUMBING & HEATIN	Summarized transactions: 3	967.04
279	CENTURYLINK	Summarized transactions: 5	964.61
280	NETWORK SERVICES COMPANY	Summarized transactions: 11	961.29
281	BARR ENGINEERING COMPANY (P)	Summarized transactions: 1	959.50
282	AMARIL UNIFORM COMPANY	Summarized transactions: 13	943.81
283	GRAYBAR ELECTRIC COMPANY INC	Summarized transactions: 7	913.41
284	TROY D DAHLOREN	Summarized transactions: 1	905.68
285	PEAKER SERVICES INC	Summarized transactions: 2	905.63

ROCHESTER PUBLIC UTILITIES
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286	NALCO COMPANY	Summarized transactions: 7	901.00
287	WORKS COMPUTING INC	Summarized transactions: 1	880.30
288	PEOPLES ENERGY COOPERATIVE	Summarized transactions: 2	867.96
289	INTERSTATE MOTOR TRUCKS INC	Summarized transactions: 3	850.65
290	KELLER AMERICA (P)	Summarized transactions: 2	826.42
291	ZEE MEDICAL SERVICE INC (P)	Summarized transactions: 2	825.42
292	PEOPLES ENERGY COOPERATIVE	Summarized transactions: 6	812.95
293	VIKING AUTOMATIC SPRINKLER IN	Summarized transactions: 1	812.00
294	BOLTON AND MENK (P)	Summarized transactions: 2	800.00
295	SOUTHERN STATES LLC	Summarized transactions: 7	774.25
296	SCHLINK WALTER	Summarized transactions: 2	769.84
297	CANADIAN HONKER RESTAURANT &	Summarized transactions: 3	768.33
298	PRAIRIE EQUIPMENT CO LLC	Summarized transactions: 2	766.58
299	JENNINGS, STROUSS & SALMON PL	Summarized transactions: 1	745.00
300	KIRK KEY INTERLOCK COMPANY	Summarized transactions: 6	729.99
301	PITNEY BOWES INC	Summarized transactions: 1	724.87
302	MINNESOTA ENERGY RESOURCES CO	Summarized transactions: 2	718.46
303	ERC WIPING PRODUCTS INC	Summarized transactions: 2	714.30
304	KROC FM/AM	Summarized transactions: 2	714.00
305	BADGER PAINTING	Summarized transactions: 2	709.50
306	LARSON MARK	Summarized transactions: 3	706.70
307	ALTEC INDUSTRIES INC	Summarized transactions: 8	700.88
308	K A A L TV LLC	Summarized transactions: 1	700.00
309	ITRON INC	Summarized transactions: 1	688.50
310	POWER DELIVERY PROGRAM INC	Summarized transactions: 2	678.35
311	LEKATZ CARTER	Summarized transactions: 4	676.71
312	NORTHERN / BLUETARP FINANCIAL	Summarized transactions: 5	672.02
313	POMPS TIRE SERVICE INC	Summarized transactions: 1	661.26
314	HACH COMPANY	Summarized transactions: 3	649.51
315	J & W INSTRUMENTS INC (P)	Summarized transactions: 2	646.77
316	SCHUMACHER ELEVATOR COMPANY	Summarized transactions: 1	641.25
317	LITTLE DAVID	Summarized transactions: 3	634.72
318	FCX PERFORMANCE INC	Summarized transactions: 4	616.18
319	MN MUNICIPAL UTILITIES ASSN C	Summarized transactions: 1	600.00
320	CITY OF ROCHESTER	Summarized transactions: 4	596.37
321	SANDERS GREG	Summarized transactions: 5	586.50
322	EDS FURNITURE & WOOD REPAIR L	Summarized transactions: 1	580.00
323	McGRANN SHEA CARNIVAL STRAUGH	Summarized transactions: 1	577.50
324	SHERWIN WILLIAMS CO	Summarized transactions: 5	574.42
325	ADAMSON MOTORS INC	Summarized transactions: 1	565.16
326	MN SOCIETY OF CERTIFIED PUBLI	Summarized transactions: 1	549.00
327	VERIZON WIRELESS	Summarized transactions: 2	533.36
328	VARIDESK LLC	Summarized transactions: 2	529.03
329	EPLUS TECHNOLOGY INC	Summarized transactions: 2	505.51
330	BLACKBURN MANUFACTURING CO	Summarized transactions: 2	500.71
331	SY VAN	Summarized transactions: 4	491.05
332	SCHMIDT GOODMAN OFFICE PRODUC	Summarized transactions: 3	473.88
333	KARIE PASALIS	Summarized transactions: 1	450.00
334	AMERICAN PAYMENT CENTER	Summarized transactions: 1	446.56
335	ABRASIVES INC	Summarized transactions: 1	445.77
336	RONCO ENGINEERING SALES INC	Summarized transactions: 5	441.92
337	NORTHERN / BLUETARP FINANCIAL	Summarized transactions: 6	429.49
338	PLUMBERS SERVICE - MN.	Summarized transactions: 1	425.00
339	THOMPSON GARAGE DOOR CO INC	Summarized transactions: 3	419.67
340	WORKING PERSONS STORE	Summarized transactions: 3	418.86
341	A T & T	Summarized transactions: 1	417.58
342	CLAREY'S SAFETY EQUIPMENT dba	Summarized transactions: 3	410.00

ROCHESTER PUBLIC UTILITIES

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343	BADGER METER INC (P)	Summarized transactions: 6	402.17
344	HEIMER WILLIAM T	Summarized transactions: 2	376.60
345	EO JOHNSON CO INC	Summarized transactions: 2	374.80
346	ROCH PLUMBING & HEATING CO IN	Summarized transactions: 1	373.57
347	CHOSEN VALLEY TESTING	Summarized transactions: 1	365.00
348	PETERSON FRANK	Summarized transactions: 2	353.50
349	HASKIN TIM	Summarized transactions: 1	353.00
350	R D O - POWERPLAN OIB	Summarized transactions: 2	347.84
351	CLAREY'S SAFETY EQUIPMENT dba	Summarized transactions: 1	343.00
352	CDW GOVERNMENT INC	Summarized transactions: 2	339.45
353	MN PIPE & EQUIPMENT	Summarized transactions: 1	336.60
354	WILLIAMS SCOTSMAN INC	Summarized transactions: 1	332.90
355	ARNOLDS SUPPLY & KLEENIT CO (	Summarized transactions: 1	329.18
356	HY VEE	Summarized transactions: 2	328.67
357	CENTURYLINK	Summarized transactions: 1	325.95
358	LANGUAGE LINE SERVICES INC	Summarized transactions: 1	319.29
359	JOHNSON PRINTING CO INC	Summarized transactions: 1	311.01
360	COMMUNITY EDUCATION	Summarized transactions: 1	300.00
361	BLOM BRYAN	Summarized transactions: 1	300.00
362	ANDERSON JUDITH	Summarized transactions: 1	300.00
363	VIRGILS INC	Summarized transactions: 1	300.00
364	SOMA CONSTRUCTION INC	Summarized transactions: 1	298.86
365	K Y B A FM	Summarized transactions: 1	294.00
366	WERNER ELECTRIC SUPPLY	Summarized transactions: 6	292.21
367	PHENOVA INC	Summarized transactions: 3	290.40
368	SEMA	Summarized transactions: 1	284.40
369	DAKOTA SUPPLY GROUP	Summarized transactions: 8	282.24
370	MICHAEL J VAN DE VOORT	Summarized transactions: 1	282.09
371	MENARDS ROCHESTER NORTH	Summarized transactions: 4	281.25
372	TOTAL RESTAURANT SUPPLY	Summarized transactions: 1	280.97
373	ROCH PLUMBING & HEATING CO IN	Summarized transactions: 2	270.17
374	NELSON TODD J	Summarized transactions: 2	268.94
375	PULVER MOTOR SERVICE	Summarized transactions: 1	267.19
376	UNITED CONVEYOR SUPPLY COMPAN	Summarized transactions: 2	265.74
377	ADVANCED DISPOSAL SVC SOLID W	Summarized transactions: 1	262.12
378	CINTAS CORP	Summarized transactions: 2	257.06
379	ALLEGRA OF ROCHESTER	Summarized transactions: 1	251.86
380	FRANZ REPROGRAPHICS INC	Summarized transactions: 3	251.31
381	PROGRESSIVE TRUCK BODY REPAIR	Summarized transactions: 2	250.47
382	CLEMENTS CHEVROLET CADILLAC S	Summarized transactions: 2	247.99
383	CITY OF ROCHESTER	Summarized transactions: 1	232.86
384	AMERICAN ENGINEERING TESTING	Summarized transactions: 1	232.50
385	MENARDS ROCHESTER SOUTH	Summarized transactions: 2	214.82
386	PROCESS MEASUREMENT CO	Summarized transactions: 2	208.81
387	HEROLD FLAGS	Summarized transactions: 2	205.20
388	INGERSOLL RAND COMPANY	Summarized transactions: 2	202.70
389	MN DEPT OF LABOR & INDUSTRY	Summarized transactions: 1	200.00
390	STATES MANUFACTURING CORP	Summarized transactions: 1	198.00
391	RAIN RICHARD	Summarized transactions: 1	197.30
392	SUTTON JEREMY	Summarized transactions: 2	192.77
393	THOMAS TOOL & SUPPLY INC	Summarized transactions: 4	192.35
394	FASTENAL COMPANY	Summarized transactions: 4	192.08
395	NICKELS SCOTT	Summarized transactions: 2	186.00
396	MEYERS KEVIN	Summarized transactions: 2	180.00
397	MISSISSIPPI WELDERS SUPPLY CO	Summarized transactions: 3	178.70
398	MCMASTER CARR SUPPLY COMPANY	Summarized transactions: 4	174.18
399	ARROW ACE HARDWARE-ST PETER	Summarized transactions: 3	170.88

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400	FEDEX SHIPPING	Summarized transactions: 5	166.31
401	BLUESPIRE STRATEGIC MARKETING	Summarized transactions: 1	163.33
402	CULLIGAN OF ROCHESTER INC	Summarized transactions: 2	161.15
403	TOKAY SOFTWARE	Summarized transactions: 2	160.00
404	POST BULLETIN CO	Summarized transactions: 1	155.20
405	CURVATURE INC	Summarized transactions: 1	149.63
406	PROPERTY RECORDS OLMSTED COUN	Summarized transactions: 2	138.00
407	CORPORATE WEB SERVICES INC	Summarized transactions: 1	135.00
408	HENTGES GLASS CO	Summarized transactions: 1	131.81
409	BROWN C O INS AGENCY INC	Summarized transactions: 1	125.00
410	NAPA AUTO PARTS (P)	Summarized transactions: 1	121.17
411	INNER TITE CORP	Summarized transactions: 2	120.38
412	TOTAL TOOL SUPPLY INC (P)	Summarized transactions: 3	119.13
413	PAULS LOCK & KEY SHOP INC	Summarized transactions: 2	118.90
414	VANCO SERVICES LLC	Summarized transactions: 1	115.68
415	GILLUND ENTERPRISES	Summarized transactions: 2	115.51
416	ALS LABORATORY GROUP TRIBOLOG	Summarized transactions: 1	114.89
417	MENARDS ROCHESTER NORTH	Summarized transactions: 6	111.17
418	CHARTER COMMUNICATIONS HOLDIN	Summarized transactions: 1	102.67
419	REBATES	Summarized transactions: 3	100.00
420	AMERICAN PRESSURE INC	Summarized transactions: 4	99.69
421	POWER DYNAMICS INC	Summarized transactions: 3	99.17
422	ON SITE SANITATION INC	Summarized transactions: 1	93.14
423	LORTON DATA INC	Summarized transactions: 1	91.47
424	STRUVES PAINT & DECORATING (P	Summarized transactions: 2	90.48
425	WRIGHTS SMALL ENGINE SERVICE	Summarized transactions: 1	85.23
426	GREAT RIVER ENERGY	Summarized transactions: 1	84.77
427	SLEEPY EYE TELEPHONE CO	Summarized transactions: 1	84.76
428	RDO EQUIPMENT COMPANY	Summarized transactions: 1	81.35
429	GARCIA GRAPHICS INC	Summarized transactions: 1	75.00
430	HERCULES INDUSTRIES INC	Summarized transactions: 2	73.37
431	VERIFIED CREDENTIALS INC	Summarized transactions: 1	73.00
432	RED SEAL ELECTRIC CO INC	Summarized transactions: 3	72.78
433	DONAHUE DEBRA	Summarized transactions: 1	63.67
434	SPECTRUM REACH	Summarized transactions: 1	56.00
435	MSC INDUSTRIAL SUPPLY CO INC	Summarized transactions: 1	52.37
436	STAR TRIBUNE	Summarized transactions: 1	49.27
437	ULINE	Summarized transactions: 2	45.15
438	GRAINGER INC	Summarized transactions: 1	44.70
439	OSWEILER TODD	Summarized transactions: 2	43.62
440	SANCO EQUIPMENT LLC	Summarized transactions: 3	43.44
441	BREKKE MATTHEW	Summarized transactions: 2	42.00
442	FLAGSOURCE dba	Summarized transactions: 1	40.83
443	BAUER BUILT INC (P)	Summarized transactions: 2	40.34
444	LOUKEN LIGHTS	Summarized transactions: 2	39.11
445	HAWKINS INC	Summarized transactions: 3	36.99
446	CENTRAL FINANCE OLMSTED COUNT	Summarized transactions: 1	36.75
447	MINNESOTA ENERGY RESOURCES CO	Summarized transactions: 1	27.73
448	TAUZELL JOHN	Summarized transactions: 2	24.50
449	QUANDT STEVE	Summarized transactions: 1	23.00
450	JOHNSON STEVE	Summarized transactions: 1	23.00
451	HORSMAN ROGER	Summarized transactions: 1	23.00
452	RENDLER SCOTT	Summarized transactions: 1	23.00
453	MENARDS ROCHESTER SOUTH	Summarized transactions: 1	22.96
454	MEGGER (P)	Summarized transactions: 1	20.32
455	MONSON STEVE	Summarized transactions: 1	20.00
456	LENN JON	Summarized transactions: 1	19.00

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457	BARRY SCREEN PRINT CO dba	Summarized transactions: 3	18.71
458	ROCH RESTAURANT SUPPLY	Summarized transactions: 1	18.04
459	CARQUEST AUTO PARTS	Summarized transactions: 2	16.64
460	KOBILARCSIK JOSEPH	Summarized transactions: 1	15.00
461	ANDERTON RANDY	Summarized transactions: 1	15.00
462	SEEME PRODUCTIONS LLC	Summarized transactions: 1	10.00
463	CREDIT MANAGEMENT LP	Summarized transactions: 1	5.69
464			
465		**Price Range Total:**	188,164.88
466			
467		**Grand Total:**	19,785,440.25

FOR BOARD ACTION

Agenda Item # **(ID # 8832)** **Meeting Date: 4/24/2018**

SUBJECT: Audit Presentation – 2017 Annual Audit Results

PREPARED BY: Bryan Blom

ITEM DESCRIPTION:

On April 24, 2018, the Audit Committee reviewed the results of the 2017 financial audit with Mr.Aaron Worthman of Baker Tilly Virchow Krause, LLP. A brief overview of the audit process and results will be presented by Mr. Worthman along with a copy of the annual report.

UTILITY BOARD ACTION REQUESTED:

Recommend the Board accept the financial audit report and place on file.

FOR BOARD ACTION

Agenda Item # **(ID # 8834)** **Meeting Date: 4/24/2018**

SUBJECT: Postpone Water Cost-of-Service Study until 2019

PREPARED BY: Bryan Blom

ITEM DESCRIPTION:

The RPU Board Policy titled Rates states that a cost-of-service study will be conducted at least every three years. The last Water Utility cost-of-service study was conducted in 2015 and was used to establish a three-year rate track covering 2016 through 2018. A cost-of-service study has been planned for and budgeted in 2018, which is the normal three-year cycle.

The Water Utility is conducting a Water Main Renewal and Replacement Prioritization Study later in 2018. The results from Phase I of that study would be useful in determining appropriate projects and amounts to include in the upcoming budgets and forecasts for the next several years, however the study results won't be available in time for the 2019 budget preparation cycle and setting the next multi-year rate track.

Management recommends that the Board approve postponing the Water Utility Cost-of-Service Study one year beyond the normal three-year cycle; from 2018 to 2019, so that results from Phase I of the Water Main Renewal and Replacement Prioritization Study can be incorporated into budgets and forecasts for the next several years and be used in establishing the next multi-year rate track.

UTILITY BOARD ACTION REQUESTED:

Approve postponing the Water Utility Cost-of-Service Study from 2018 to 2019.

RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, that the Water Utility Cost-of-Service Study be postponed one year beyond the normal three-year cycle, from 2018 to 2019, so that results from Phase I of the Water Main Renewal and Replacement Prioritization Study can be incorporated into the multi-year rate track, budgets and forecasts for the next several years.

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 24th day of April, 2018.

_____

President

_____

Secretary

FOR BOARD ACTION

Agenda Item # **(ID # 8840)** **Meeting Date: 4/24/2018**

SUBJECT: Distributed Generation Interconnect Rules

PREPARED BY: Steve Cook

ITEM DESCRIPTION:

In November 2017, several RPU staff members attended a seminar presented by the Minnesota Municipal Utility Association (MMUA) addressing Distributed Generation Interconnections to the electric distribution system. MMUA was concerned that some municipals may not have had their governing authority adopt rules consistent with State Statute. In order to assist municipals in complying with Statute and being consistent between members, MMUA has prepared a Distribution Generation Rules template and it was presented at the meeting.

RPU has had in place rules covering distributed generation for several years and we believe that our existing rules and policies are in compliance with the State Statutes. Staff has reviewed the MMUA provided Distribution Generation Rules Template and compared them to our existing rules, and concluded that the substance of the rules appears to be similar. Staff believes that there is a benefit to RPU and our customers in having our documentation relating to Distributed Generation Interconnections match that of other municipal utilities within the state as closely as possible.

Attached are the proposed Distributed Generation Rules and associated schedules.

UTILITY BOARD ACTION REQUESTED:

Approve the Distribution Generation Rules Updates and associated schedules.

Rochester Public Utilities
City of Rochester Minnesota
Distributed Generation Rules

Part A. DEFINITIONS.

Subpart 1. Applicability. For purposes of these rules, the following terms have the meanings given them below.

Subp. 2. Average retail utility energy rate. "Average retail utility energy rate" means, for any class of utility customer, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales. The computation shall use data from the most recent 12-month period available.

Subp. 3. Backup power. "Backup power" means electric energy or capacity supplied by the utility to replace energy ordinarily generated by a qualifying facility's own generation equipment during an unscheduled outage of the facility.

Subp. 4. Capacity. "Capacity" means the capability to produce, transmit, or deliver electric energy, and is measured by the number of kilowatts alternating current at the point of common coupling between a qualifying facility and the utility's electric system during a 15-minute interval period.

Subp. 5. Capacity costs. "Capacity costs" means the costs associated with providing the capability to deliver energy. The utility capital costs consist of the costs of facilities from the utility and the utility's wholesale provider used to generate, transmit, and distribute electricity and the fixed operating and maintenance costs of these facilities.

Subp. 6. Customer. "Customer" means the person named on the utility electric bill for the premises.

Subp. 7. Energy. "Energy" means electric energy, measured in kilowatt-hours.

Subp. 8. Energy costs. "Energy costs" means the variable costs associated with the production of electric energy. They consist of fuel costs and variable operating and maintenance expenses.

Subp. 9. Firm power. "Firm power" means energy delivered by the qualifying facility to the utility with at least a 65 percent on-peak capacity factor in the month. The capacity factor is based upon the qualifying facility's maximum metered capacity delivered to the utility during the on-peak hours for the month.

Subp. 10. Governing body. "Governing body" means Rochester Public Utilities Board

Subp. 11. Interconnection costs. "Interconnection costs" means the reasonable costs of connection, switching, metering, transmission, distribution, safety provisions, and administrative costs incurred by the utility that are directly related to installing and maintaining the physical facilities necessary to permit interconnected operations with a qualifying facility. Costs are considered interconnection costs only to the extent that they exceed the costs the utility would incur in selling electricity to the qualifying facility as a nongenerating customer.

Subp. 12. Interruptible power. "Interruptible power" means electric energy or capacity supplied by the utility to a qualifying facility subject to interruption under the provisions of the utility's tariff applicable to the retail class of customers to which the qualifying facility would belong irrespective of its ability to generate electricity.

Subp. 13. Maintenance power. "Maintenance power" means electric energy or capacity supplied by a utility during scheduled outages of the qualifying facility.

Subp. 14. On-peak hours. "On-peak hours" means either those hours formally designated by the utility as on-peak for ratemaking purposes or those hours for which its typical loads are at least 85 percent of its average maximum monthly loads.

Subp. 15. Point of common coupling. "Point of common coupling" means the point where the qualifying facility's generation system, including the point of generator output, is connected to the utility's electric power grid.

Subp. 16. Purchase. "Purchase" means the purchase of electric energy or capacity or both from a qualifying facility by the utility.

Subp. 17. Qualifying facility. "Qualifying facility" means a cogeneration or small power production facility which satisfies the conditions established in Code of Federal Regulations, title 18, part 292. The initial operation date or initial installation date of a cogeneration or small power production facility must not prevent the facility from being considered a qualifying facility for the purposes of this chapter if it otherwise satisfies all stated conditions. The qualifying facility must be owned by a Customer and located in the utility service area.

Subp. 18. Sale. "Sale" means the sale of electric energy or capacity or both by the utility to a qualifying facility.

Subp. 19a. Standby charge. "Standby charge" means the charge imposed by the utility upon a qualifying facility for the recovery of costs for the provision of standby services necessary to make electricity service available to the qualifying facility.

Subp. 19b. Standby service. "Standby service" means the service to potentially provide electric energy or capacity supplied by the utility to a qualifying facility greater than 40 kW.

Subp. 20. Supplementary power. "Supplementary power" means electric energy or capacity supplied by the utility which is regularly used by a qualifying facility in addition to that which the facility generates itself.

Subp. 21. System emergency. "System emergency" means a condition on the utility's system which is imminently likely to result in significant disruption of service to customers or to endanger life or property.

Subp. 22. Utility. "Utility" means the City of Rochester acting by and through its Rochester Public Utilities (hereafter called “RPU”)..

Part B. SCOPE AND PURPOSE.

The purpose of these rules are to implement certain provisions of Minnesota Statutes, section 216B.164; the Public Utility Regulatory Policies Act of 1978, United States Code, title 16, section 824a-3; and the Federal Energy Regulatory Commission regulations, Code of Federal Regulations, title 18, part 292. These rules shall be applied in accordance with their intent to give the maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public.

Part C. FILING REQUIREMENTS

Annually, on or before April 1 the utility shall file for review and approval, a cogeneration and small power production tariff with the governing body. The tariff must contain schedules 1 – 5.

SCHEDULE 1.

Schedule 1 shall contain the calculation of the average retail utility energy rates to be updated annually.

SCHEDULE 2.

Schedule 2 shall contain all standard contracts to be used with qualifying facilities, containing applicable terms and conditions.

SCHEDULE 3.

Schedule 3 shall contain the utility's adopted interconnection process, safety standards, technical requirements for distributed energy resource systems, required operating procedures for interconnected operations, and the functions to be performed by any control and protective apparatus.

SCHEDULE 4.

Schedule 4 shall contain procedures for notifying affected qualifying facilities of any periods of time when the utility will not purchase electric energy or capacity because of extraordinary operational circumstances which would make the costs of purchases during those periods greater than the costs of internal generation.

SCHEDULE 5.

Schedule 5 shall contain the estimated average incremental energy costs by seasonal, peak and off-peak periods for the utility's power supplier from which energy purchases are first avoided Schedule 5 shall also contain the net annual avoided capacity costs, if any, stated per kilowatt-hour and averaged over the on-peak hours and over all hours for the utility's power supplier from which capacity purchases are first avoided. Both the average incremental energy costs and net annual avoided capacity costs shall be increased by a factor equal to 50 percent of the utility and the utility's power supplier's overall line losses due to distribution, transmission and transformation of electric energy.

Part D. AVAILABILITY OF FILINGS.

All filings shall be maintained at the utility's general office and any other offices of the utility where rate tariffs are kept. The filings shall be made available for public inspection during normal business hours. The utility shall supply the current year's distributed generation rates, interconnection procedures and application form on the utility website, if practicable, or at the utility office.

Part E. REPORTING REQUIREMENTS

Annually the utility shall report to the governing body for its review and approval an annual report including information in subparts 1-3. The utility shall still comply with other federal and state reporting of distributed generation to federal and state agencies expressly required by statute.

Subpart 1. Summary of Average Retail Utility Energy Rate. A summary of the qualifying facilities that are currently served under average retail utility energy rate.

Subp. 2. Other Qualifying Facilities. A summary of the qualifying facilities that are not currently served under average retail utility energy rate.

Subp. 3. Wheeling. A summary of the wheeling undertaken with respect to qualifying facilities.

Part F. CONDITIONS OF SERVICE

Subpart 1. Requirement to Purchase. The utility shall purchase energy and capacity from any qualifying facility which offers to sell energy and capacity to the utility and agrees to the conditions in these rules.

Subp. 2. Written Contract. A written contract shall be executed between the qualifying facility and the utility.

Part G. ELECTRICAL CODE COMPLIANCE.

Subpart 1. Compliance; standards. The interconnection between the qualifying facility and the utility must comply with the requirements in the most recently published edition of the National Electrical Safety Code issued by the Institute of Electrical and Electronics Engineers. The interconnection is subject to subparts 2 and 3.

Subp. 2. Interconnection. The qualifying facility is responsible for complying with all applicable local, state, and federal codes, including building codes, the National Electrical Code (NEC), the National Electrical Safety Code (NESC), and noise and emissions standards. The utility shall require proof that the qualifying facility is in compliance with the NEC before the interconnection is made. The qualifying facility must obtain installation approval from an electrical inspector recognized by the Minnesota State Board of Electricity.

Subp. 3. Generation system. The qualifying facility's generation system and installation must comply with the American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE) standards applicable to the installation.

Part H. RESPONSIBILITY FOR APPARATUS.

The qualifying facility, without cost to the utility, must furnish, install, operate, and maintain in good order and repair any apparatus the qualifying facility needs in order to operate in accordance with schedule 3.

Part I. TYPES OF POWER TO BE OFFERED; STANDBY SERVICE.

Subpart 1. Service to be offered. The utility shall offer maintenance, interruptible, supplementary, and backup power to the qualifying facility upon request.

Subp. 2. Standby service. The utility shall offer a qualifying facility standby power or service at the utility's applicable standby rate schedule.

Part J. DISCONTINUING SALES DURING EMERGENCY.

The utility may discontinue sales to the qualifying facility during a system emergency, if the discontinuance and recommencement of service is not discriminatory.

Part K. RATES FOR UTILITY SALES TO A QUALIFYING FACILITY.

Rates for sales to a qualifying facility are governed by the applicable tariff for the class of electric utility customers to which the qualifying facility belongs or would belong were it not a qualifying facility. Such rates are not guaranteed and may change from time to time at the discretion of the utility.

Part L. STANDARD RATES FOR PURCHASES FROM QUALIFYING FACILITIES.

Subpart 1. Qualifying facilities with 100 kilowatt capacity or less. For qualifying facilities with capacity of 100 kilowatts or less, standard purchase rates apply. The utility

shall make available four types of standard rates, described in parts M, N, O, and P. The qualifying facility with a capacity of 100 kilowatts or less must choose interconnection under one of these rates, and must specify its choice in the written contract required in part V. Any net credit to the qualifying facility must, at its option, be credited to its account with the utility or returned by check or comparable electronic payment service within 15 days of the billing date. The option chosen must be specified in the written contract required in part V. Qualifying facilities remain responsible for any monthly service charges and demand charges specified in the tariff under which they consume electricity from the utility.

Subp. 2. Qualifying facilities over 100 kilowatt capacity. A qualifying facility with more than 100 kilowatt capacity has the option to negotiate a contract with the utility or, if it commits to provide firm power, be compensated under standard rates.

Subp. 3. Grid Access Charge. A qualifying facility may be assessed a monthly Grid Access Charge to recover the fixed costs not already paid by the customer through the customer's existing billing arrangement. The additional charge shall be reasonable and appropriate for the class of customer based on the most recent cost of service study defining the Grid Access Charge. The cost of service study for the Grid Access Charge shall be made available for review by the customer of the utility upon request.

Part M. AVERAGE RETAIL UTILITY ENERGY RATE.

Subpart 1. Applicability. The average retail utility energy rate is available only to customer-owned qualifying facilities with capacity of less than 40 kilowatts which choose not to offer electric power for sale on either a time-of-day basis, a simultaneous purchase and sale basis or roll-over credit basis.

Subp. 2. Method of billing. The utility shall bill the qualifying facility for the excess of energy supplied by the utility above energy supplied by the qualifying facility during each billing period according to the utility's applicable retail rate schedule.

Subp. 3. Additional calculations for billing. When the energy generated by the qualifying facility exceeds that supplied by the utility to the customer at the same site during the same billing period, the utility shall compensate the qualifying facility for the excess energy at the average retail utility energy rate.

Part N. SIMULTANEOUS PURCHASE AND SALE BILLING RATE.

Subpart 1. Applicability. The simultaneous purchase and sale rate is available only to qualifying facilities with capacity of less than 40 kilowatts which choose not to offer electric power for sale on average retail utility energy rate basis, time-of-day basis or roll-over credit basis.

Subp. 2. Method of billing. The qualifying facility must be billed for all energy and capacity it consumes during a billing period according to the utility's applicable retail rate schedule.

Subp. 3. Compensation to qualifying facility; energy purchase. The utility shall purchase all energy which is made available to it by the qualifying facility. At the option of the qualifying facility, its entire generation must be deemed to be made available to the utility. Compensation to the qualifying facility must be the energy rate shown on schedule 5.

Subp. 4. Compensation to qualifying facility; capacity purchase. If the qualifying facility provides firm power to the utility, the capacity component must be the utility ‘s net annual avoided capacity cost per kilowatt-hour averaged over all hours shown on schedule 5, divided by the number of hours in the billing period. If the qualifying facility does not provide firm power to the utility, no capacity component may be included in the compensation paid to the qualifying facility.

Part O. TIME-OF-DAY PURCHASE RATES.

Subpart 1. Applicability. Time-of-day rates are required for qualifying facilities with capacity of 40 kilowatts or more and less than or equal to 100 kilowatts, and they are optional for qualifying facilities with capacity less than 40 kilowatts. Time-of-day rates are also optional for qualifying facilities with capacity greater than 100 kilowatts if these qualifying facilities provide firm power.

Subp. 2. Method of billing. The qualifying facility must be billed for all energy and capacity it consumes during each billing period according to the utility's applicable retail rate schedule.

Subp. 3. Compensation to qualifying facility; energy purchases. The utility shall purchase all energy which is made available to it by the qualifying facility. Compensation to the qualifying facility must be the energy rate shown on schedule 5.

Subp. 4. Compensation to qualifying facility; capacity purchases. If the qualifying facility provides firm power to the utility, the capacity component must be the capacity cost per kilowatt shown on schedule 5 divided by the number of on-peak hours in the billing period. The capacity component applies only to deliveries during on-peak hours. If the qualifying facility does not provide firm power to the utility, no capacity component may be included in the compensation paid to the qualifying facility.

Part P. ROLL-OVER CREDIT PURCHASE RATES.

Subpart 1. Applicability. The roll-over credit rate is available only to qualifying facilities with capacity of less than 40 kilowatts which choose not to offer electric power for sale on

average retail utility energy rate basis, time-of-day basis or simultaneous purchase and sale basis.

Subp. 2. Method of billing. The utility shall bill the qualifying facility for the excess of energy supplied by the utility above energy supplied by the qualifying facility during each billing period according to the utility's applicable retail rate schedule.

Subp. 3. Additional calculations for billing. When the energy generated by the qualifying facility exceed that supplied by the utility during a billing period, the utility shall apply the excess kilowatt hours as a credit to the next billing period kilowatt hour usage. Excess kilowatt hours that are not offset in the next billing period shall continue to be rolled over to the next consecutive billing period. Any excess kilowatt hours rolled over that are remaining at the last billing period of the calendar year shall cancel with no additional compensation.

Part Q. CONTRACTS NEGOTIATED BY CUSTOMER.

A qualifying facility with capacity greater than 100 kilowatts must negotiate a contract with the utility setting the applicable rates for payments to the customer of avoided capacity and energy costs.

Subpart 1. Amount of Capacity Payments. The qualifying facility which negotiates a contract under part Q must be entitled to the full avoided capacity costs of the utility. The amount of capacity payments will be determined by the utility and the utility's wholesale power provider.

Subp. 2. Full Avoided Energy Costs. The qualifying facility which negotiates a contract under part Q must be entitled to the full avoided energy costs of the utility. The costs must be adjusted as appropriate to reflect line losses.

Part R. WHEELING

Qualifying facilities with capacity of 30 kilowatts or greater, are interconnected to the utility's distribution system and choose to sell the output of the qualifying facility to any other utility, must pay any appropriate wheeling charges to the utility. Within 15 days of receiving payment from the utility ultimately receiving the qualifying facility's output, the utility shall pay the qualifying facility the payment less the charges it has incurred and its own reasonable wheeling costs.

Part S. NOTIFICATION TO CUSTOMERS

Subpart 1. Contents of Written Notice. Following each annual review and approval by the utility of the cogeneration rate tariffs the utility shall furnish in the monthly newsletter or similar mailing, written notice to each of its customers that the utility is obligated to interconnect with and purchase electricity from cogenerators and small power producers.

Subp. 2. Availability of Information. The utility shall make available to all interested persons upon request, the interconnection process and requirements adopted by the utility, pertinent rate schedules and sample contractual agreements.

Part T. DISPUTE RESOLUTION

In case of a dispute between a utility and a qualifying facility or an impasse in the negotiations between them, either party may request the governing body to determine the issue.

Part U. INTERCONNECTION CONTRACTS

Subpart 1. Interconnection Standards. The utility shall provide a customer applying for interconnection with a copy of, or electronic link to, the utility's adopted interconnection process and requirements.

Subp. 2. Existing Contracts. Any existing interconnection contract executed between the utility and a qualifying facility with capacity of less than 40 kilowatts remains in force until terminated by mutual agreement of the parties or as otherwise specified in the contract. The governing body has assumed all dispute responsibilities as listed in existing interconnection contracts. Disputes are resolved in accordance with Part T.

Subp. 3. Renewable Energy Credits; Ownership. Generators own all renewable energy credits unless other ownership is expressly provided for by a contract between a generator and the utility

Part V. UNIFORM AGREEMENT.

The form for uniform agreement that shall be used between the utility and a qualifying facility having less than 40 kilowatts of capacity is as shown in subpart 1.

Subpart 1. Contract for Cogeneration and Small Power Production Facilities. (See "Schedule 2 Interconnection Contracts for Distributed Generation".)

ADOPTED ON:

_____

SIGNED:

_____

Chair of the Rochester Public Utilities Board

ROCHESTER PUBLIC UTILITIES
RULES COVERING COGENERATION
AND SMALL POWER PRODUCTION

SCHEDULE 1

	2017	2016	
RESIDENTIAL			
Total revenues	$ 49,179,997.56	$ 46,886,573.49	
Less fixed revenues (customer charge)	$10,962,678.10	$ 9,886,674.87	
Net revenues	$38,217,319.46	$ 36,999,898.62	
kWh	339,824,837	346,973,740	
Average retail energy rate	**$ 0.11246**	**$ 0.10660**	5.50%
COMMERCIAL			
SGS			
Total revenues	$ 18,331,246.89	$ 17,418,052.63	
Less fixed revenues (customer charge)	$ 2,055,976.48	$ 1,892,719.98	
Net revenues	$ 16,275,270.41	$ 15,525,332.65	
kWh	141,607,019	143,336,873	
Average retail energy rate	**$ 0.11493**	**$ 0.10830**	6.12%
MGS			
Total revenues	$ 40,443,144.74	$ 37,858,550.47	
Less fixed revenues (customer charge)	-	-	
Net revenues	$ 40,443,144.74	$ 37,858,550.47	
kWh	368,519,563	367,345,290	
Average retail energy rate	**$ 0.10974**	**$ 0.10310**	6.44%
LGS			
Total revenues	$ 13,914,844.24	$ 13,905,213.81	
Less fixed revenues (customer charge)	-	-	
Net revenues	$ 13,914,844.24	$ 13,905,213.81	
kWh	135,638,339	143,059,868	
Average retail energy rate	**$ 0.10259**	**$ 0.09720**	5.55%
INDUSTRIAL			
Total revenues	$ 18,971,303.65	$ 18,212,052.83	
Less fixed revenues (customer charge)	-	-	
Net revenues	$ 18,971,303.65	$ 18,212,052.83	
kWh	187,571,789	194,519,909	
Average retail energy rate	**$ 0.10114**	**$ 0.09360**	8.06%

March 27, 2018

ROCHESTER PUBLIC UTILITIES

Schedule 2

INTERCONNECTION CONTRACTS FOR DISTRIBUTED GENERATION

Document History and Review

Date	Revision Description	Revised by
3/27/2018	Date of Original Document Contracts pulled from interconnection process documents	

TABLE OF CONTENTS

Overview

This document, Schedule 2 Interconnection Contracts for Distributed Generation" contains the required interconnect agreements that must be signed prior to a system operating in parallel with RPU's distribution system. This document contains two different contract templates:

1) "Contract For Cogeneration And Small Power Production Facilities Rated (0 to 40kW)" and
2) "Rochester Public Utilities Interconnection Agreement For the Interconnection of Extended Parallel Distributed Generation Systems with the RPU Distribution System"

The contract to be used is dependent upon if the system is less than 40kW",

The interconnection of generation to RPU's electric system is covered by RPU's Distributed Generation Rules which can be found on RPU's website. The Distributed Generation Rules are a governing document approved by RPU's board. Information on the interconnection process and requirements can be found on RPU's website in the following documents:

1) "Interconnection Processing for Qualifying Facilities (0-40kW)"
2) "Interconnection Process Distribution Connected Distributed Generation System (40kW-10MW)"
3) "Interconnection Requirements Distribution Connected Distributed Generation System (40kW-10MW)"

Contract For Cogeneration And Small Power Production Facilities Rated (0 to 40kW)

THIS CONTRACT is entered into _____, ____, by the City of Rochester, acting by and through its Rochester Public Utilities (hereafter called "RPU") and _____ _____ (hereafter called "QF" - Qualifying Facility).

RECITALS

The QF has installed electric generating facilities, consisting of _____ _____ _____ (Description of facilities), rated at _____ kilowatts of electricity, on property located at _____ _____.

The QF is a customer of RPU located within the assigned electric service territory of RPU.

The QF is prepared to generate electricity in parallel with the Utility.

The QF's electric generating facilities meet the requirements of RPU's Rules Covering Cogeneration and Small Power Production Facilities (the Rules) and any technical standards for interconnection RPU has established that are authorized by those rules.

RPU is obligated under federal and Minnesota law to interconnect with the QF and to purchase electricity offered for sale by the QF.

A contract between the QF and RPU is required

AGREEMENTS

The QF and RPU agree:

1. RPU will sell electricity to the QF under the rate schedule in force for the class of customer to which the QF belongs.

2. RPU will buy electricity from the QF under the current rate schedule filed with the RPU Board. The QF has elected the rate schedule category hereinafter indicated (select one):

____ a. Average retail utility rate.

____ b. Simultaneous purchase and sale billing rate.

____ c. Roll-over credits.

____ d. Time-of-day purchase rate.

A copy of the presently filed rate schedule is attached to this contract.

3. The rates for sales and purchases of electricity may change over the time this contract is in force, due to actions by RPU or the State of Minnesota, and the QF and RPU agree that sales and purchases will be made under the rates in effect each month during the time this contract is in force.

4. RPU will compute the charges and payments for purchases and sales for each billing period. Any net credit to the QF, other than kilowatt-hour credits under clause 2(c), will be made under one of the following options as chosen by the QF:

____ 1. Credit to the QF's account with RPU.

____ 2. Paid by check to the QF within 15 days of the billing date.

5. Renewable energy credits associated with generation from the facility are owned by:

_____

6. The QF will operate its electric generating facilities within any rules, regulations, and policies adopted by RPU not prohibited by the Minnesota Public Utilities Commission's on Cogeneration and Small Power Production. RPU's rules, regulations, and policies must be consistent with the Minnesota Public Utilities Commission's rules on Cogeneration and Small Power Production, as required under Minnesota Statutes §216B.164, subdivision 9.

7. Appendix A to this contract shall contain a description of the type of metering and interconnection facilities to be employed.

8. The QF will not enter into an arrangement whereby electricity from the generating facilities will be sold to an end user in violation of the Utility's or any other electric utility's exclusive right to provide electric service in its service area under Minnesota Statutes, Sections 216B.37-44.

9. The QF will operate its electric generating facilities so that they conform to the national, state, and local electric and safety codes, and will be responsible for the costs of conformance.

10. The QF is responsible for the actual, reasonable costs of interconnection incurred by RPU which are estimated to be $_____. The QF will pay

RPU in this way:

_____

_____.

11. The QF will give RPU reasonable access to its property and electric generating facilities if the configuration of those facilities does not permit disconnection or testing from RPU's side of the interconnection. If RPU enters the QF's property, RPU will remain responsible for its personnel.

12. RPU may stop providing electricity to the QF during a system emergency. RPU will not discriminate against the QF when it stops providing electricity or when it resumes providing electricity.

13. RPU may stop purchasing electricity from the QF when necessary for RPU to construct, install, maintain, repair, replace, remove, investigate, or inspect any equipment or facilities within its electric system. RPU will notify the QF before it stops purchasing electricity in this way:

_____

_____.

14. The QF will keep in force liability insurance against personal or property damage due to the installation, interconnection, and operation of its electric generating facilities. The amount of insurance coverage will be $_____ (The amount must be consistent with the Utility's distributed generation tariff under Minnesota Statutes §216B.1611, subdivision 3, clause 2.).

15. RPU and the QF agree to attempt to resolve any dispute arising hereunder promptly and in a good faith manner.

16. The RPU Board governing RPU has authority to consider and determine disputes, if any, that arise under this contract pursuant to Minnesota Statues §216B.164, subd. 9.

17. This contract becomes effective as soon as it is signed by the QF and RPU. This contract will remain in force until either the QF or RPU gives written notice to the other that the contract is canceled. This contract will be canceled 30 days after notice is given. Such cancellation does not relieve the QF of any costs for which it is responsible under Item 8 above.

18. Neither the QF or RPU will be considered in default as to any obligation if the QF or the RPU is prevented from fulfilling the obligation due to an event of Force Majeure. However, the QF or RPU whose performance under this contract is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations.

19. This contract can only be amended or modified by mutual agreement in writing signed by the QF and RPU.

20. Each Party will be responsible for its own acts or omissions and the results thereof to the extent authorized by law and shall not be responsible for the acts or omissions of any others and the results thereof.

21. The QF's and RPU's liability to each other for failure to perform its obligations under this contract shall be limited to the amount of direct damage actually occurred. In no event, shall the QF or RPU be liable to each other for any punitive, incidental, indirect, special, or consequential damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.

22. RPU does not give any warranty, expressed or implied, to the adequacy, safety, or other characteristics of the QF's interconnected system.

23. This contract contains all the agreements made between the QF and RPU except that this contract shall at all times be subject to all rules and orders issued by any government agency having the requisite jurisdiction.. The QF and RPU are not responsible for any agreements other than those stated in this contract.

THE QF AND RPU HAVE READ THIS CONTRACT AND AGREE TO BE BOUND BY ITS TERMS. AS EVIDENCE OF THEIR AGREEMENT, THEY HAVE EACH SIGNED THIS CONTRACT BELOW ON THE DATE WRITTEN AT THE BEGINNING OF THIS CONTRACT.

QF

By: _____

Dated:_____

ROCHESTER PUBLIC UTILITIES

_____

Authorized Representative

_____

General Manager

CITY OF ROCHESTER

_____

Mayor

Attest:

_____

City Clerk

Reviewed by:

_____

City Attorney

Statutory Authority:

MS s 216A.05; 216B.08; 216B.164 subd 6

History:

9 SR 993; L 1998 c 254 art 1 s 107

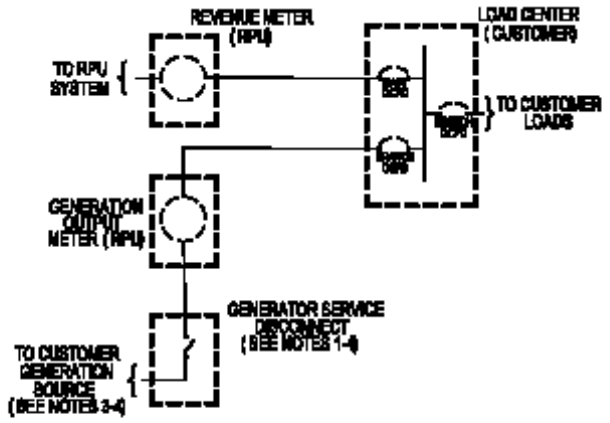
Posted:

February 28, 2000

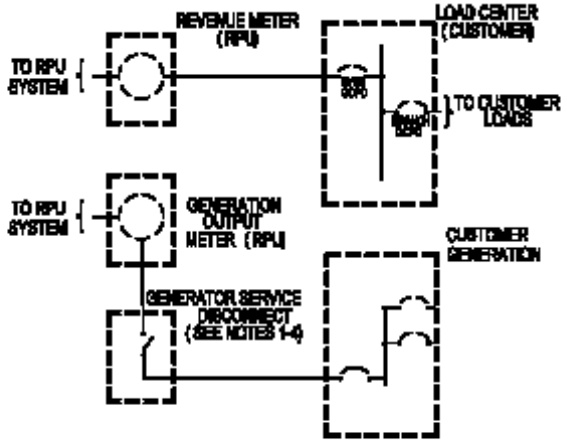
Appendix A

The following diagram represents typical system configurations for the allowed rates:

Average Retail Rate and Roll-over Credit Configuration



Simultaneous Purchase & Sale and Time-of-Day Configuration



1. Disconnect and generation meter must be installed outside within 10 feet of revenue meter and readily accessible
2. Disconnect must be clearly marked "GENERATOR DISCONNECT SWITCH"
3. Disconnect must allow for lockout / tagout capability
4. Disconnect must open all phases
5. Customer generation must be capable of synchronizing with service voltage phase and magnitude
6. Meter socket supplied by customer

NOT TO SCALE

ROCHESTER PUBLIC UTILITIES

NO	REVISION	APPROVED BY	APPROVED DATE
1	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]

QUALIFYING GENERATION
INTERCONNECT LESS THAN 40 KW

DWG # ME1M01

ISSUE DATE – MAY 11

CONTRACT FOR ABOVE 40 KW

Interconnection Agreement For the Interconnection of Extended Parallel Distributed Generation Systems with the RPU Distribution System

Rochester Public Utilities
Interconnection Agreement
For the Interconnection of Extended Parallel Distributed Generation Systems with the RPU Distribution System

This Generating System Interconnection Agreement is entered into by and between Rochester Public Utilities (RPU) and the Interconnection Customer "_____". The Interconnection Customer and RPU are sometimes also referred to in this Agreement jointly as "Parties" or individually as "Party".

In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

1. SCOPE AND PURPOSE

A) Establishment of Point of Common Coupling. This Agreement is intended to provide for the Interconnection Customer to interconnect and operate a Generation System with a total Nameplate Capacity of 10MWs or less in parallel with the RPU distribution system at the location identified in Exhibit C and shown in the Exhibit A one-line diagram.

B) This Agreement governs the facilities required to and contains the terms and condition under which the Interconnection Customer may interconnect the Generation System to the RPU distribution system. This Agreement does not authorize the Interconnection Customer to export power or constitute an agreement to purchased or wheel the Interconnection Customer's power. Other services that the Interconnection Customer may require from RPU, or others, may be covered under separate agreements.

C) To facilitate the operation of the Generation System, this agreement also allows for the occasional and inadvertent export of energy to RPU. The amount, metering, billing and accounting of such inadvertent energy exporting shall be governed by Exhibit D (Operating Agreement). This Agreement does not constitute an agreement by RPU to purchase or pay for any energy, inadvertently or intentionally exported, unless expressly noted in Exhibit D or under a separately executed power purchase agreement (PPA).

D) This agreement does not constitute a request for, nor the provision of any transmission delivery service or any local distribution delivery service.

E) The Technical Requirements for interconnection are covered in a separate Technical Requirements document know as, the "Rochester Public Utilities Distributed Generation Interconnection Requirements", a copy of which has been made available to the Interconnection Customer and incorporated and made part of this Agreement by this reference

2. DEFINITIONS

A. "Dedicated Facilities" the equipment that is installed due to the interconnection of the Generation System and not required to serve other RPU customers.
B. "Extended Parallel" means the Generation System is designed to remain connected with RPU for an extended period of time.
C. "Generation" any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.
D. "Generation Interconnection Coordinator" the person or persons designated by RPU to provide a single point of coordination with the Applicant for the generation interconnection process.
E. "Generation System" the interconnected generator(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.
F. "Interconnection Customer" the party or parties who will own/operate the Generation System and are responsible for meeting the requirements of the agreements and Technical Requirements. This could be the Generation System applicant, installer, owner, designer, or operator.
G. "Local EPS" an electric power system (EPS) contained entirely within a single premises or group of premises.
H. "Nameplate Capacity" the total nameplate capacity rating of all the Generation included in the Generation System. For this definition the "standby" and/or maximum rated kW capacity on the nameplate shall be used.
I. "Point of Common Coupling" the point where the Local EPS is connected to the RPU distribution system
J. "Point of Delivery" the point where the energy changes possession from one party to the other. Typically this will be where the metering is installed but it is not required that the Point of Delivery is the same as where the energy is metered
K. "Technical Requirements" RPU Requirements for Interconnection of Distributed Generation

3. DESCRIPTION OF INTERCONNECTION CUSTOMER'S GENERATION SYSTEM

A. A description of the Generation System, including a single-line diagram showing the general arrangement of how the Interconnection Customer's Generation System is interconnected with RPU's distribution system, is attached to and made part of this Agreement as Exhibit A. The single-line diagram shows the following;

i. Point of Delivery (if applicable)
ii. Point of Common Coupling
iii. Location of Meter(s)
iv. Ownership of the equipment.
v. Generation System total Nameplate Capacity _____ kW
vi. Scheduled operational (on-line) date for the Generation System.

4. RESPONSIBILITIES OF THE PARTIES

A. The Parties shall perform all obligations of this Agreement in accordance with all applicable laws and regulations, operating requirements and good utility practices.
B. Interconnection Customer shall construct, operate and maintain the Generation System in accordance with the applicable manufacture's recommend maintenance schedule, the Technical Requirements and in accordance with this Agreement
C. RPU shall carry out the construction of the Dedicated Facilities in a good and workmanlike manner, and in accordance with standard design and engineering practices.

5. CONSTRUCTION

The Parties agree to cause their facilities or systems to be constructed in accordance with the laws of the State of Minnesota and to meet or exceed applicable codes and standards provided by the NESC (National Electrical Safety Code), ANSI (American National Standards Institute), IEEE (Institute of Electrical and Electronic Engineers), NEC (National Electrical Code), UL (Underwriter's Laboratory), Technical Requirements and local building codes and other applicable ordinances in effect at the time of the installation of the Generation System.

A. Charges and payments

The Interconnection Customer is responsible for the actual costs to interconnect the Generation System with the RPU distribution system, including, but not limited to any Dedicated Facilities attributable to the addition of the Generation System, RPU labor for installation coordination, installation testing and engineering review of the Generation System and interconnection design. Estimates of these costs are outlined in Exhibit B. While estimates, for budgeting purposes, have been provided in Exhibit B, the actual costs are still the responsibility of the Interconnection Customer, even if they exceed the estimated amount(s). All costs, for which the Interconnection Customer is responsible for, must be reasonable under the circumstances of the design and construction.

i. Dedicated Facilities
1) During the term of this Agreement, RPU shall design, construct and install the Dedicated Facilities outlined in Exhibit B. The Interconnection Customer shall be responsible for paying the actual costs of the Dedicated Facilities attributable to the addition of the Generation System.

2) Once installed, the Dedicated Facilities shall be owned and operated by RPU and all costs associated with the operating and maintenance of the Dedicated Facilities, after the Generation System is operational, shall be the responsibility of RPU, unless otherwise agreed.

3) By executing this Agreement, the Interconnection Customer grants permission for RPU to begin construction and to procure the necessary facilities and equipment to complete the installation of the Dedicated Facilities, as outlined in Exhibit B. If for any reason, the Generation System project is canceled or modified, so that any or all of the Dedicated

Facilities are not required, the Interconnection Customer shall be responsible for all costs incurred by RPU, including, but not limited to the additional costs to remove and/or complete the installation of the Dedicated Facilities. The Interconnection Customer may, for any reason, cancel the Generation System project, so that any or all of the Dedicated Facilities are not required to be installed. The Interconnection Customer shall provide written notice to RPU of cancellation. Upon receipt of a cancellation notice, RPU shall take reasonable steps to minimize additional costs to the Interconnection Customer, where reasonably possible.

ii. Payments

a) The Interconnection Customer shall provide reasonable adequate assurances of credit, including a letter of credit or personal guaranty of payment and performance from a creditworthy entity acceptable under RPU credit policy and procedures for the unpaid balance of the estimated amount shown in Exhibit B.

b) The payment for the costs outlined in Exhibit B, shall be as follows;

1) 1/3 of estimated costs, outlined in Exhibit B, shall be due upon execution of this agreement.

2) 1/3 of estimated costs, outlined in Exhibit B, shall be due prior to initial energization of the Generation System, with the RPU distribution system.

3) Remainder of actual costs, incurred by RPU, shall be due within 30 days from the date the bill is mailed by RPU after project completion.

6. DOCUMENTS INCLUDED WITH THIS AGREEMENT.

A. This agreement includes the following exhibits, which are specifically incorporated herein and made part of this Agreement by this reference: (if any of these Exhibits are deemed not applicable for this Generation System installation they may be omitted from the final Agreement by RPU.)

i. Exhibit A – Description of Generation System and single-line diagram. This diagram shows all major equipment, including, visual isolation equipment, Point of Common Coupling, Point of Delivery for Generation Systems that intentionally export, ownership of equipment and the location of metering.

ii. Exhibit B – Estimated installation and testing costs payable by the Interconnection Customer. Included in this listing shall be the description and estimated costs for the required Dedicated Facilities being installed by RPU for the interconnection of the Generation System and a description and estimate for the final acceptance testing work to be done by RPU.

iii. Exhibit C – Engineering Data Submittal – A standard form that provides the engineering and operating information about the Generation System.

iv. Exhibit D – Operating Agreement – This provides specific operating information and requirements for this Generation System interconnection. This Exhibit has a separate signature section and may be modified, in writing, from time to time with the agreement of both parties.

Exhibit E – Maintenance Agreement – This provides specific maintenance requirements for this Generation System interconnection. This Exhibit has a

1) separate signature section and may be modified, in writing, from time to time with the agreement of both parties.

7. TERMS AND TERMINATION

A. This Agreement shall become effective as of the date when both the Interconnection Customer and RPU have both signed this Agreement. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:

i. The Parties agree in writing to terminate the Agreement; or

ii. The Interconnection Customer may terminate this agreement at any time, by written notice to RPU, prior to the completion of the final acceptance testing of the Generation System by RPU. Once the Generation System is operational then VII.A.3 applies. Upon receipt of a cancellation notice, RPU shall take reasonable steps to minimize additional costs to the Interconnection Customer, where reasonably possible.

iii. Once the Generation System is operational the Interconnection Customer may terminate this agreement after 30 days written notice to RPU, unless otherwise agreed to within the Exhibit D, Operating Agreement; or

iv. RPU may terminate this agreement after 30 days written notice to the Interconnection Customer if:
1) The Interconnection Customer fails to interconnect and operate the Generation System per the terms of this Agreement; or
2) The Interconnection Customer fails to take all corrective actions specified in RPU's written notice that the Generation System is out of compliance with the terms of this Agreement, within the time frame set forth in such notice, or
3) If the Interconnection Customer fails to complete RPU's final acceptance testing of the generation system within 24 months of the date proposed under section III.A.5.

B. Upon termination of this Agreement the Generation System shall be disconnected from the RPU distribution system. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing, at the time of the termination.

8. OPERATIONAL ISSUES

Each Party will, at its own cost and expense, operate, maintain, repair and inspect, and shall be fully responsible for, the facilities which it now or hereafter may own, unless otherwise specified.

A) Technical Standards: The Generation System shall be installed and operated by the Interconnection Customer consistent with the requirements of this Agreement; the Technical Requirements; the applicable requirements located in the National Electrical

Code (NEC); the applicable standards published by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE); and local building and other applicable ordinances in effect at the time of the installation of the Generation System.

B) Right of Access: At all times, RPU's personnel shall have access to the disconnect switch of the Generation System for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate the RPU distribution system safely and to provide service to its customers. If necessary for the purposes of this Agreement, the Interconnection Customer shall allow RPU access to the Local EPS's equipment and facilities located on the premises.

C) Electric Service Supplied: RPU will supply the electrical requirements of the Local EPS that are not supplied by the Generation System. Such electric service shall be supplied, to the Interconnection Customer's Local EPS, under the rate schedules applicable to the Customer's class of service as revised from time to time by RPU.

D) Operation and Maintenance: The Generation System shall be operated and maintained, by the Interconnection Customer in accordance with the Technical Standards and any additional requirements of Exhibit D and Exhibit E, attached to this document, as amended, in writing, from time to time.

E) Cooperation and Coordination: Both RPU and the Interconnection Customer shall communicate and coordinate their operations, so that the normal operation of the RPU distribution system does not unduly effect or interfere with the normal operation of the Generation System and the Generation System does not unduly effect or interfere with the normal operation of the RPU distribution system. Under abnormal operations of either the Generation System or the RPU distribution system, the responsible Party shall provide reasonably timely communication to the other Party to allow mitigation of any potentially negative effects of the abnormal operation of their system.

F) Disconnection of Unit: RPU may disconnect the Generation System as reasonably necessary, for termination of this Agreement; non-compliance with this Agreement; system emergency, imminent danger to the public or RPU personnel; routine maintenance, repairs and modifications to the RPU distribution system. When reasonably possible, RPU shall provide prior notice to the Interconnection Customer explaining the reason for the disconnection. If prior notice is not reasonably possible, RPU shall after the fact, provide information to the Interconnection Customer as to why the disconnection was required. It is agreed that RPU shall have no liability for any loss of sales or other damages, including all consequential damages for the loss of business opportunity, profits or other losses, regardless of whether such damages were foreseeable, for the disconnection of the Generation System per this Agreement. RPU shall expend reasonable effort to reconnect the Generation System in a timely manner and to work towards mitigating damages and losses to the Interconnection Customer where reasonably possible.

G) Modifications to the Generation System – When reasonably possible the Interconnection Customer shall notify RPU, in writing, of plans for any modifications to the Generation System interconnection equipment, including all information needed by RPU as part of the review described in this paragraph, at least twenty (20) business days prior to undertaking such modification(s). Modifications to any of the interconnection equipment, including, all interconnection required protective systems, the generation control systems, the transfer switches/breakers, interconnection protection VT's & CT's, and Generation System capacity, shall be included in the notification to RPU. When reasonably possible the Interconnection Customer agrees not to commence installation of any modifications to the Generating System until RPU has approved the modification, in writing, which approval shall not be unreasonably withheld. RPU shall have a minimum of five (5) business days to review and respond to the planned modification. RPU shall not take longer than a maximum of ten (10) business days, to review and respond to the modification after the receipt of the information required to review the modifications. When it is not reasonably possible for the Interconnection Customer to provide prior written notice, the Interconnection Customer shall provide written notice to RPU as soon as reasonably possible, after the completion of the modification(s).

H) Permits and Approvals: The Interconnection Customer shall obtain all environmental and other permits lawfully required by governmental authorities prior to the construction of the Generation System. The Interconnection Customer shall also maintain these applicable permits and compliance with these permits during the term of this Agreement.

9. LIMITATION OF LIABILITY

A) Each Party shall at all times indemnify, defend, and save the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, costs and expenses, reasonable attorneys' fees and court costs, arising out of or resulting from the Party's performance of its obligations under this agreement, except to the extent that such damages, losses or claims were caused by the negligence or intentional acts of the other Party.

B) Each Party's liability to the other Party for failure to perform its obligations under this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any punitive, incidental, indirect, special, or consequential damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.

C) Notwithstanding any other provision in this Agreement, with respect to RPU's provision of electric service to any customer including the Interconnection Customer, RPU's liability to such customer shall be limited as set forth in the RPU's tariffs and terms and conditions for electric service, and shall not be affected by the terms of this Agreement.

10. DISPUTE RESOLUTION

A) Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.

B) In the event a dispute arises under this Agreement, and if it cannot be resolved by the Parties within thirty (30) days after written notice of the dispute to the other Party, the Parties agree to submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in the State of Minnesota. The Parties agree to participate in good faith in the mediation for a period of 90 days. If attempted dispute resolution fails, then either Party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of this Agreement.

11. INSURANCE

A) At a minimum, In connection with the Interconnection Customer's performance of its duties and obligations under this Agreement, the Interconnection Customer shall maintain, during the term of the Agreement, general liability insurance, from a qualified insurance agency with a B+ or better rating by "Best" and with a combined single limit of not less then:

i. Two million dollars ($2,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is greater than 250kW.
ii. One million dollars ($1,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is between 40kW and 250kW.
iii. Three hundred thousand ($300,000) for each occurrence if the Gross Nameplate Rating of the Generation System is less than 40kW.
iv. Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under this agreement.

B) The general liability insurance required shall, by endorsement to the policy or policies, (a) include RPU as an additional insured; (b) contain a severability of interest clause or cross-liability clause; (c) provide that RPU shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to RPU prior to cancellation, termination, alteration, or material change of such insurance.

C) If the Generation System is connected to an account receiving residential service from RPU and its total generating capacity is smaller than 40kW, then the endorsements required in Section XI.B shall not apply.

D) The Interconnection Customer shall furnish the required insurance certificates and endorsements to RPU prior to the initial operation of the Generation System. Thereafter, RPU shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance

E) Evidence of the insurance required in Section XI.A. shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance maintained by RPU.

F) If the Interconnection Customer is self-insured with an established record of self-insurance, the Interconnection Customer may comply with the following in lieu of Section XI.A – E:

i. Interconnection Customer shall provide to RPU, at least thirty (30) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under section XI.A.

ii. If Interconnection Customer ceases to self-insure to the level required hereunder, or if the Interconnection Customer is unable to provide continuing evidence of its ability to self-insure, the Interconnection Customer agrees to immediately obtain the coverage required under Section XI.A.

G) Failure of the Interconnection Customer or RPU to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

H) All insurance certificates, statements of self-insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the following:

Rochester Public Utilities
Attention:
4000 E River Rd NE
Rochester, MN 55906

12. MISCELLANEOUS

A) FORCE MAJEURE

i. An event of Force Majeure means any act of God, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. An event of Force Majeure does not include an act of negligence or intentional wrongdoing. Neither Party will be considered in default as to any obligation hereunder if such Party is prevented from fulfilling the obligation due to an event of Force Majeure. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations hereunder.

ii. Neither Party will be considered in default of any obligation hereunder if such Party is prevented from fulfilling the obligation due to an event of Force Majeure. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations hereunder.

B) NOTICES

i. Any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person or sent by first class mail, postage prepaid, to the person specified below:

1) If to RPU

Rochester Public Utilities
Attention:
4000 E River Rd NE
Rochester, MN 55906

2) If to Interconnection Customer

A Friendly Interconnection Customer
Attention: Generation Coordinator
12345 Interconnection Drive.
Anytown, MN 55000

ii. A Party may change its address for notices at any time by providing the other Party written notice of the change, in accordance with this Section.

iii. The Parties may also designate operating representatives to conduct the daily communications which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's notice to the other Party.

C) ASSIGNMENT

The Interconnection Customer shall not assign its rights nor delegate its duties under this Agreement without RPU's written consent. Any assignment or delegation the Interconnection Customer makes without RPU's written consent shall not be valid. RPU shall not unreasonably withhold its consent to the Generating Entities assignment of this Agreement

D) NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

E) GOVERNING LAW AND INCLUSION OF RPU'S TARIFFS AND RULES.

i. This Agreement shall be interpreted, governed and construed under the laws of the State of Minnesota as if executed and to be performed wholly within

the State of Minnesota without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.

ii. The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the tariff schedules and rules applicable to the electric service provided by RPU, which tariff schedules and rules are hereby incorporated into this Agreement by this reference.

iii. Notwithstanding any other provisions of this Agreement, RPU shall have the right to unilaterally change rates, charges, classification, service, tariff or rule or any agreement relating thereto.

F) AMENDMENT AND MODIFICATION

This Agreement can only be amended or modified by a writing signed by both Parties.

G) ENTIRE AGREEMENT

This Agreement, including all attachments, exhibits, and appendices, constitutes the entire Agreement between the Parties with regard to the interconnection of the Generation System of the Parties at the Point(s) of Common Coupling expressly provided for in this Agreement and supersedes all prior agreements or understandings, whether verbal or written. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement. Each party also represents that in entering into this Agreement, it has not relied on the promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the incorporated attachments, exhibits and appendices.

H) CONFIDENTIAL INFORMATION

Except as otherwise agreed or provided herein, each Party shall hold in confidence and shall not disclose confidential information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section) unless required to do so by any law or court order. Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which, in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.

I) NON-WARRANTY

Neither by inspection, if any, or non-rejection, nor in any other way, does RPU give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Interconnection Customer or leased by the Interconnection Customer from third parties, including without limitation the Generation System and any structures, equipment, wires, appliances or devices appurtenant thereto.

J) NO PARTNERSHIP.
This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

13) SIGNATURES
IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Rochester Public Utilities

_____

Authorized Representative

_____

General Manager

City of Rochester

_____

Mayor

Attest:

_____
City Clerk

Reviewed by:

_____
City Attorney

EXHIBIT A

GENERATION SYSTEM DESCRIPTION
AND SINGLE-LINE DIAGRAM

EXHIBIT B

SUMMARY OF RPU COSTS AND DESCRIPTION OF DEDICATED FACILITIES BEING INSTALLED BY RPU FOR THE INTERCONNECTION OF THE GENERATION SYSTEM

This Exhibit shall provide the estimated total costs that will be the responsibility of the Interconnection Customer. It is assumed that the Initial application has been filed and the engineering studies have been paid for and completed. So those costs are not included on this listing.

What is listed below is a general outline of some of the major areas where costs could occur. Other costs than those listed below may be included by RPU, provided that those costs are a direct result from the request to interconnect the Generation System. The following list is only a guideline and RPU will be creating a unique Exhibit B that is tailored for the specific Generation System interconnection.

a. Dedicated Facilities (equipment, design and installation labor)
b. Monitoring & Control System (equipment, design and installation labor)
c. Design Coordination and Review
d. Construction Coordination labor costs
e. Testing (development of tests and physical testing)

Contingency

EXHIBIT C

ENGINEERING DATA SUBMITTAL

Attach a completed Engineering Data Submittal form from Appendix C of “Rochester Public Utilities Interconnection Process for Distributed Generation Systems”.

EXHIBIT D

OPERATING AGREEMENT

Each Generation System interconnection will be unique and will require a unique Operating Agreement. The following is a listing of some of the possible areas that will be covered in an operating agreement. The following has not been developed into a standard agreement due to the unique nature of each Generation System. It is envisioned that this Exhibit will be tailored by RPU for each Generation System interconnection. It is also intended that this Operating Agreement Exhibit will be reviewed and updated periodically, to allow the operation of the Generation System, to change to meet the needs of both RPU and the Interconnection Customer, provided that the change does not negatively affect the other Party. There may also be operating changes required by outside issues, such has changes in FERC and MISO requirements and/or policies which will require this Operating Agreement to be modified.

The following items are provided to show the general types of items which may be included in this Operating Agreement. The items included in the Operating Agreement shall not be limited to the items shown on this list.

A) Applicable RPU Tariffs – discussion on which tariffs are being applied for this installation and possibly how they will be applied.

B) Var Requirements – How will the Generation System be required to operate so as to control the power factor of the energy flowing in either direction across the interconnection?

C) Inadvertent Energy – This Operating Agreement needs to provide the method(s) that will be used to monitor, meter and account for the inadvertent energy used or supplied by the Generation System. Tariffs and operating rules that apply for this Generation System interconnection shall be discussed in this Operating Agreement.

D) Control Issues - Starting and stopping of the generation, including the remote starting and stopping, if applicable.

E) Dispatch of Generation Resources - What are the dispatch requirements for the Generation System, Can it only run during Peak Hours? Are there a limited number of hours that it can run? Is it required to have met an availability percentage? This will greatly depend upon the PPA and other requirements. Is the Interconnection Customer required to coordinate outages of the Generation System, with RPU?

F) Outages of Distribution System – How are emergency outages handled? How are other outages scheduled? If the Interconnection Customer requires RPU to schedule the outages during after-hours, who pays for RPU's overtime?

G) Notification / Contacts - Who should be notified? How should they be notified? When should they be notified? For what reasons, should the notification take place?
   i. Starting of the Generation

   ii. Dispatching of Generation

iii. Notification of failures (both RPU system and Generation System failures)

H) Documentation of Operational Settings – How much fuel will the generation System typically have on hand? How long can it run with this fuel capacity? How is the generation system set to operate for a power failure? These may be issues that should be documented in the Operating Agreement. The following are a couple of examples:

i. "The Generation System will monitor the RPU distribution system phase voltage and after 2 seconds of any phase voltage below 90% the generation will be started and the load transferred to the generator, if the generation is not already running."

ii. "The Generation System will wait for 30 minutes after it senses the return of the RPU distribution system frequency and voltage, before it will automatically reconnect to the RPU distribution system"

I) Cost of testing for future failures – If a component of the Generation System fails or needs to be replaced, which effects the interconnection with the RPU distribution system, what is the process for retesting, and for replacement? Who pays for the additional costs of RPU to work with the Interconnection Customer to resolve these problems and/or to complete retesting of the modified equipment?

J) Right of Access: At all times, RPU shall have access to the disconnect switch of the Generation System for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate the RPU distribution system safely and to provide service to its customers, at all times. If necessary for the purposed of this Agreement, the Interconnection Customer shall allow RPU access to the RPU's equipment and facilities located on the premises.

Add Signature Section -The Operating Agreement should be set up so that it is individually signed and dated by both parties.

EXHIBIT E

MAINTENANCE AGREEMENT

Each Generation System interconnection will be unique and will require a unique Maintenance Agreement. It is envisioned that this Exhibit will be tailored for each Generation System interconnection. It is also intended that this Maintenance Agreement Exhibit will be reviewed and updated periodically, to allow the maintenance of the Generation System be allowed to change to meet the needs of both RPU and the Interconnection Customer, provided that change does not negatively affect the other Party. There may also be changes required by outside issues; such has changes in FERC and MISO requirements and/or policies which will require this agreement to be modified.

A) Routine Maintenance Requirements –

i. Who is providing maintenance – Contact information
ii. Periods of maintenance

1) Modifications to the Generation System - The Interconnection Customer shall notify RPU, in writing of plans for any modifications to the Generation System interconnection equipment at least twenty (20) business days prior to undertaking such modification. Modifications to any of the interconnection equipment, including all required protective systems, the generation control systems, the transfer switches/breakers, VT's & CT's, generating capacity and associated wiring shall be included in the notification to RPU. The Interconnection Customer agrees not to commence installation of any modifications to the Generating System until RPU has approved the modification, in writing. RPU shall have a minimum of five (5) business days and a maximum of ten (10) business days, to review and respond to the modification, after the receipt of the information required to review the modifications.

Add signature Section

March 27, 2018

ROCHESTER PUBLIC UTILITIES

Schedule 3a

Interconnection Process For Qualifying Facilities
(0 - 40 kW)

Revision History

Date	Revision Description	Revised by
Mar 25, 2004	Date of Original Document	
May 11, 2010	Revised Overview, Revised and reversed Step 6 & Step 7, revised System Inspection, revised Insurance, revised Rates #3, added street light fee in Rates #3a, modified Operations to say Operations & Safety	RLA
July 28, 2011	Revised Document title, revised metering diagram ME1MI01 and added as Exhibit 1, Misc formatting changes, added Appendix A & B, added Definitions, changed document name to "…Qualifying Facility". Added proof of insurance requirement. Added Rate Option on Appendix A. Clarified language in Rates section.	RLA
Aug 16, 2011	Modified language in Step 3, Step 5, Appendix A (changed Attachment to Appendix), Appendix B (rate schedule available at office instead of attached)	RLA
Mar 1, 2012	Misc. formatting	RLA
Mar 27, 2018	Revised to be consistent with RPU's latest RPU Distributed Generation Rules and current State common interconnection agreement. Removed sections: Definitions, Billing and Rates which are now covered in rules. Revised Overview which includes reference to RPU Rules Covering Cogeneration and Small Powr Production Facilities. In contract, agreements 5, 7, 14, 15, 17, 18, 19, 20 and 21. Added Exhibit 2 to the contract showing inspection checklist.	SJC

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Overview

The interconnection of generation to RPU's electric system is covered by RPU's Distributed Generation Rules which can be found on RPU's website. The Distributed Generation Rules are a governing document approved by RPU's board.

The "Interconnection Process for Qualifying Facilities (0 - 40kW)" document is a guide that describes the process and requirements for connecting a Qualifying Facility (QF) generation of 40 kW or less to Rochester Public Utilities' (RPU) distribution system.

This document will provide customers with an understanding of the process and information required allowing RPU to review and accept the applicant's equipment for interconnection in a reasonable and expeditious manner. This document will ensure that customers are aware of the technical interconnection requirements and RPU's interconnection policies and practices. Generation not operating in parallel is not subject to these requirements.

The time required to complete the process will reflect the complexity of the proposed project. Projects using previously submitted designs that have been satisfactorily tested will move through the process more quickly. Several steps may be satisfied with an initial application depending on the detail and the completeness of the application and supporting documentation submitted by the customer. Customers submitting previously tested systems, however, are not exempt from providing RPU with complete design packages necessary for RPU to verify the electrical characteristics of the generator systems, the interconnecting facilities, and the impacts of the customer's equipment on RPU's system.

Application Process

Step 1:
Customer reviews RPU's "Rules Distributed Generation Rules"
A copy of the above mentioned document is available on RPU's website for the customer to review.

Step 2: Potential customer files an application.
The filing must include the completed standard application form (Appendix A), including generator information, and a one-line drawing of the proposed QF and interconnecting system. RPU's application does not include the city's Building Safety requirements e.g. permit(s). The customer /or their installer is required to contact the city's Building and Safety Department for this information.

Step 3: RPU performs a review of customer's proposed interconnection design package.
RPU will review the design package to ensure that the plans and design satisfy the goal of attaining a safe, reliable, and efficient interconnection and satisfy the technical requirements for interconnection. Upon completion of the review, RPU will notify the customer of its final acceptance of the customer's design or an explanation of the technical requirements the design fails to meet.

Step 4: Customer commits to RPU's metering requirements and possible construction of distribution system modifications.
Metering for QF interconnection usually requires a non-standard metering installation. The customer will be responsible for the incremental costs of the metering over standard metering installation for the facility. If any construction on the utility distribution systems is determined to be required for the interconnection, the customer will be required to pay an advance payment for the estimated costs associated with the system modification.

Step 5: Interconnection Agreement is Submitted
The customer submits the contract located on the RPU website. This contract will not become officially authorized until the Mayor and City Clerk have signed the copies of the contract.,

Step 6: Project construction.
The customer can now install their facility in accordance with the previously submitted design, with comments incorporated into the installation design. RPU will commence construction and installation of any system modifications and metering requirements as identified in Step 4, after receipt of estimated system upgrade costs. RPU system modifications will vary in construction time depending on the extent of work and equipment required. The schedule for this work will be discussed with the customer.

Step 7: RPU's cost reconciliation.
RPU will reconcile its actual costs related to the customer's project against any advance payments for utility distribution system construction made by the customer. The customer will receive either a bill for any balance due or a reimbursement for overpayment as determined by

RPU. The customer must have all bills associated with the interconnection paid in full prior to RPU authorizing the operation of the interconnection.

Step 8: Final acceptance and interconnection.
RPU will review the results of its on-site verification and issue to the customer a formal letter of acceptance for interconnection. The customer's QF will be allowed to commence parallel operation upon electrical inspection by agencies having jurisdiction at the location, and satisfactory demonstration to RPU of the safe operation of the customer-owned QF system when interconnected to the RPU distribution system. In addition, the customer must have complied with and must continue to comply with any applicable code, safety, operating, maintenance, and or technical requirements. The customer is strongly urged to follow the manufacturer's maintenance, testing, and operation instructions for the life of the installed generation and associated controls.

Requirements for Interconnection

Metering
Metering for generation interconnection requires a non-standard metering installation. The customer will be responsible for the cost associated with this non-standard facility metering installation. Depending on the nature of the customer's installation, a new meter socket(s) likely will need to be installed which will be the customer's responsibility. See Exhibit 1 for metering details

Generator Service Disconnect
The customer shall provide a visible, lockable manual disconnect switch within ten (10) feet of the meter location which is readily accessible to RPU at all times of the year per Minnesota Rule 7835.5200. This disconnect switch shall be clearly marked, "Generator Disconnect Switch", with permanent half inch or larger letters. The disconnect switch will open all of the phases, but not the neutral.

Permits
The customer will provide RPU with copies of all electrical permits and inspections from agencies having jurisdiction over the location of the installation before interconnection of the generation will be allowed.

System Inspection
The QF will not be allowed to operate in parallel with RPU until the customer provides a satisfactory demonstration to RPU showing the safe operation of the generation system. See Exhibit 2 for details on RPU system inspection checklist and requirements used to demonstrate save operation.

Insurance
Due to the increased potential liability which can result from an operation of a generating facility, RPU requires a minimum liability umbrella policy of $300,000, in accordance with Minnesota Rule 7835.2300. The customer should contact their insurance carrier to advise them of the generating interconnected equipment is being added to the home or facility. Proof of $300,000 liability insurance is required to be provided to RPU.

Operation & Safety
The QF system shall not affect the safety, reliability, or operation of RPU's distribution system or adversely affect the quality of service of any adjacent customers. The QF shall not supply power to RPU during any outages of the distribution system or be used to energize any portion of a de-energized utility circuit for any reason. Islanding is not permitted. RPU may require that the QF discontinue parallel operation due to safety, reliability, operational, and power quality issues. The QF is responsible for providing protection for the installed equipment and must adhere to all applicable national, state, and local codes.

Appendix A

Application for Generation Interconnection (0 - 40 kW)

Customer:
Name:_____

Address:_____

Installation Address (if different from above):_____

Home Phone: _____ Daytime Phone_____

Email:_____

Account Number:_____

System Designer & Installation Contractor Information:
Design Consultant:_____
Address:_____
Phone:_____
Email:_____
Contact Person:_____

Installation Contractor (if different):_____
Address:_____
Phone:_____
Email:_____
Contact Person:_____

Specifications:
Estimated In-Service Date:_____

Existing Electric Service: Amperes Voltage _____ Volts_____

Identify Type of Service: ( ) Solar PV array ( ) Fuel Cell ( ) Wind ( )Other
If Other Describe:_____

Specific Location of Service Disconnect Equipment on Property:_____
_____

Pre-Incentive Install Cost and Cost Components_____

Attach a single line diagram showing the switchgear, metering and generation facilities.

Generation Equipment Information: (Include copy of product literature)

Manufacturer:_____ Model No:_____
Version No:_____

( ) Synchronous ( ) Induction ( ) Inverter
( ) Other_____
_____

Rating: _____ kW(dc) Rating: _____ kW(ac) Rating:_____kVa

( ) Single Phase ( ) Three Phase
Generator Connection: ( ) Delta ( ) Wye ( ) Wye Grounded

Interconnection Voltage: _____ Volts

Metering:_____
_____

Interconnection Compliance & Owner Acknowledgement
The electrical system referenced above shall meet RPU's "Interconnection Process For Qualifying Facilities (0 – 40kW)".

Customer shall be solely responsible for obtaining and complying with any and all necessary easements, licenses and permits, or exemptions, as may be required by federal, state, local statutes, regulations, ordinances or other legal mandates.

The customer shall submit and sign RPU's "Contract For Cogeneration And Small Power Production Facilities Rated (0 to 40kW)" prior to RPU inspection of the generating system.

The customer shall submit documentation to RPU that the system has been inspected and approved by the local permitting agency regarding electrical code requirements.

Customer shall not commence parallel operation of the generating system until inspecting written approval of the interconnection has been given by RPU.

I the undersigned have completed this Appendix A for interconnection, which accurately describes the QF equipment to be interconnected and operated in parallel with RPU's distribution system. I have read and understand the "Interconnection Process For Qualifying Facilities (0 – 40kW)" and understand that approval of Appendix A is dependent on compliance with these requirements and the accuracy of the information as included in this Appendix A.

Customer Signature Date

Exhibit 1

The Average Retail Rate and Roll-over Credit Configuration on the following diagram represents "Net Metering" along with a generation output meter:

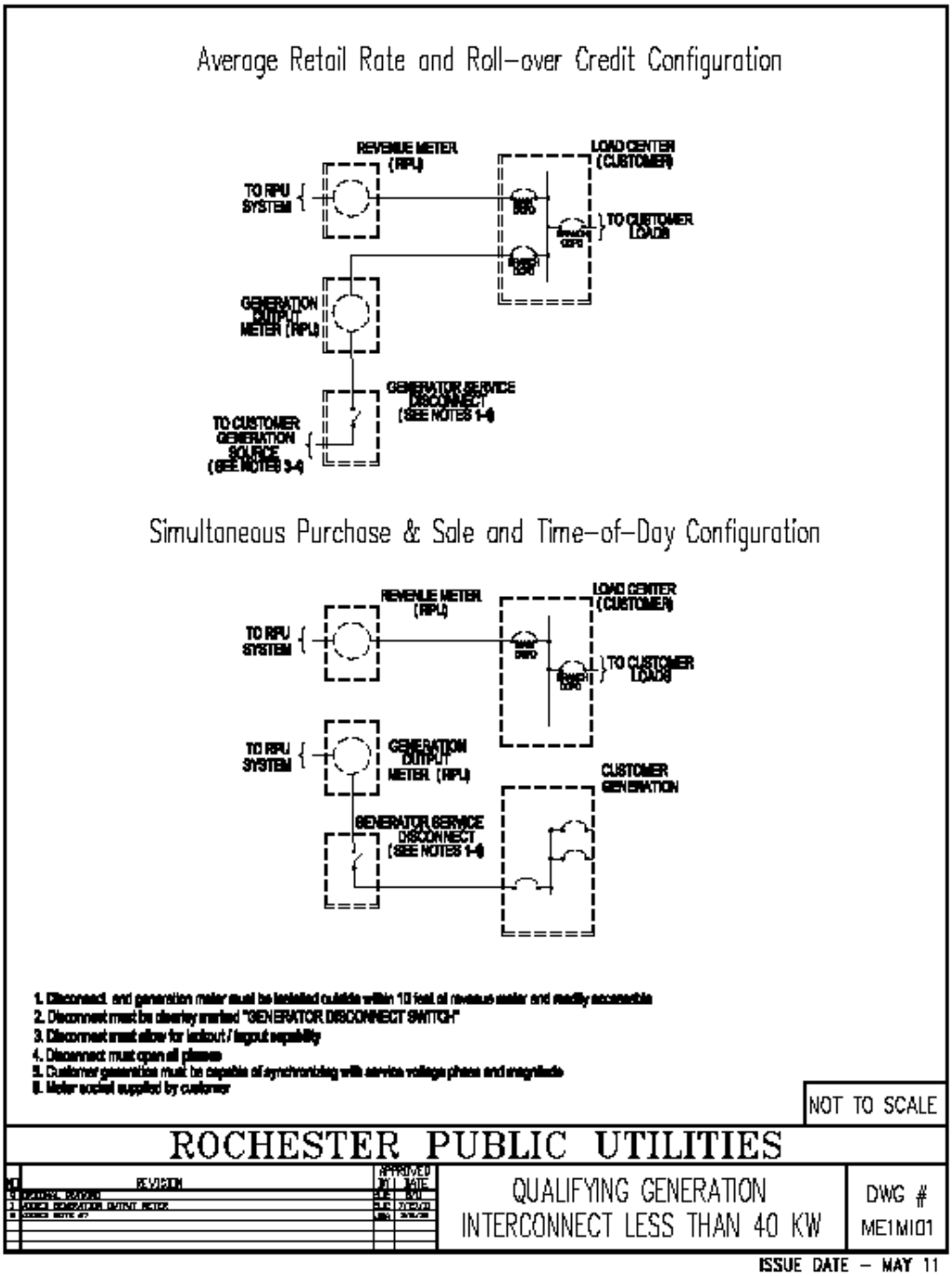

Exhibit 2

The following checklist contains the installation checklist RPU will perform prior to allowing a system to be operated in parallel with RPU's distribution system.

TASK	DATE	PERSON
Interconnection Inspection:		
☐ RPU is notified that the customer's system is installed.	_____	_____
☐ All electrical permits and inspections received from Building & Safety. Received notification from Building & Safety that the final inspection has been done and approved	_____	_____
☐ Customer or owner customer representative is present for the testing. Three phase customers acknowledge that the system will be tested for loss of phase which may cause issues to non-generating equipment and that they accept this risk. Name of representative_____ Signature of representative_____	_____	_____
☐ Testing procedure explained to customer or customer representative.	_____	_____
☐ Remote Generator Disconnect(s) installed properly and tested.	_____	_____
☐ Remote Generator Disconnect(s) labeled properly.	_____	_____
☐ Main meter area signage installed identifying location of remote Generator Disconnect(s), if located other than within 10ft of main meter.	_____	_____
☐ Disconnect the generator from utility system power and ensure the inverter(s) properly shutdown.	_____	_____
☐ Reconnect the generator to utility system power by closing the disconnect switch and ensure the system does not re-parallel with the utility system for at least 5 minute once the switch was closed.	_____	_____
Three phase systems only Open cutouts or pull elbows one phase at a time ☐ All generation stopped after one phase was lost ☐ All generation stopped after two phases were lost ☐ All generation stopped after three phases were lost	_____	_____
☐ Production meter socket tested and production meter installed.	_____	_____
☐ Bi-directional meter installed on the day of the monthly meter read date.	_____	_____
☐ Customer notified by Tech Services that system output and disconnects have been tested and accepted as functioning properly by RPU and that an RPU owned lock needs to be installed on the remote disconnect switch cover.	_____	_____

March 16, 2018

ROCHESTER PUBLIC UTILITIES

Schedule 3b

Distribution Connected
Distributed Generation Systems

(40kW – 10MW)

we pledge, we deliver

(Version 1.5)

Revision History

Date	Revision Description	Version #	Revised by
8/2/2011	Original version of the document	1.0	RLA
6/8/12	Modified Cover page, Revision History page, Introduction page, and Sections H&J of General Information, Sec H of XII of Appendix E	1.1	RLA
6/11/12	Additions/modifications made to Appendix B	1.2	RLA/SC
10/28/13	Modified language in X) B), and in XII) E) 3)	1.3	RLA
1/29/14	Typo corrections on page 11 & page 12	1.4	RLA
3/16/2018	Typical Contract moved to Interconnection Contracts for Distributed Generation Document	1.5	SJC

Rochester Public Utilities
Interconnection Process
For Distributed Generation Systems

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INTRODUCTION

This document has been prepared to explain the process established in the State of Minnesota, to interconnect a Generation System with the Rochester Public Utility (RPU) distribution system. This document covers the interconnection process for all types of Generation Systems which are rated 10MW's or less of total generation Nameplate Capacity; are planned for interconnection with RPU's distribution system; are not intended for wholesale transactions and aren't anticipated to affect the transmission system. This document does not discuss the interconnection Technical Requirements, which are covered in the "Rochester Public Utilities Interconnection Requirements" document. This other interconnection requirements document also provides definitions and explanations of the terms utilized within this document. To interconnect a Generation System with the RPU distribution system, there are several steps that must be followed. This document outlines those steps and the Parties' responsibilities. At any point in the process, if there are questions, please contact the Generation Interconnection Coordinator at RPU. Since this document has been developed to provide an interconnection process which covers a very diverse range of Generation Systems, the process appears to be very involved and cumbersome. For many Generation Systems the process is streamlined and provides an easy path for interconnection.

The promulgation of interconnection standards for Generation Systems by the Minnesota Public Utilities Commission (MPUC) must be done in the context of a reasonable interpretation of the boundary between state and federal jurisdiction. The Federal Energy Regulatory Commission (FERC) has asserted authority in the area; at least as far as interconnection at the transmission level is concerned. This, however, leaves open the question of jurisdiction over interconnection at the distribution level. The Midwest Independent System Operator's (MISO) FERC Electric Tariff, (first revised volume 1, August 23,2001) Attachment R (Generator Interconnection Procedures and Agreement) states in section 2.1 that "Any existing or new generator connecting at transmission voltages, sub-transmission voltages, or distribution voltages, planning to engage in the sale for resale of wholesale energy, capacity, or ancillary services requiring transmission service under the Midwest ISO OATT must apply to the Midwest ISO for interconnection service". Further in section 2.4 it states that "A Generator not intending to engage in the sale of wholesale energy, capacity, or ancillary services under the Midwest ISO OATT, that proposes to interconnect a new generating facility to the distribution system of a Transmission Owner or local distribution utility interconnected with the Transmission System shall apply to the Transmission Owner or local distribution utility for interconnection". It goes on further to state "Where facilities under the control of the Midwest ISO are affected by such interconnection, such interconnections may be subject to the planning and operating protocols of the Midwest ISO…."

Through discussions with MISO personnel and as a practical matter, if the Generation System Nameplate Capacity is not greater in size than the minimum expected load on the distribution substation, that is feeding the proposed Generation System, and Generation System's energy is not being sold on the wholesale market, then that installation may be considered as not "affecting" the transmission system and the interconnection may be considered as governed by this process. If the Generation System will be selling energy on the wholesale market or the Generation System's total Nameplate Capacity is greater than the expected distribution substation minimum load,

then the Applicant shall contact MISO (Midwest Independent System Operator) and follow their procedures.

GENERAL INFORMATION

1. Definitions
   A. "Applicant" is defined as the person or entity who is requesting the interconnection of the Generation System with RPU and is responsible for ensuring that the Generation System is designed, operated and maintained in compliance with the Technical Requirements.
   B. "Dedicated Facilities" is the equipment that is installed due to the interconnection of the Generation System and not required to serve other RPU customers.
   C. "Distribution System" is RPU's facilities which are not part of RPU's Transmission System or any Generation System.
   D. "Extended Parallel" means the Generation System is designed to remain connected with RPU's distribution system for an extended period of time.
   E. "Generation" is defined as any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.
   F. "Generation Interconnection Coordinator" is the person or persons designated by RPU to provide a single point of coordination with the Applicant for the generation interconnection process.
   G. "Generation System" is the interconnected generator(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.
   H. "Interconnection Customer" is the party or parties who will own/operate the Generation System and are responsible for meeting the requirements of the agreements and Technical Requirements. This could be the Generation System applicant, installer, owner, designer, or operator.
   I. "Local EPS" is an electric power system (EPS) contained entirely within a single premises or group of premises
   J. "Nameplate Capacity" is the total nameplate capacity rating of all the Generation included in the Generation System. For this definition the "standby" and/or maximum rated kW capacity on the nameplate shall be used.
   K. "Open Transfer" is a method of transferring the local loads from the RPU distribution system to the generator such that the generator and the RPU distribution system are never connected together.
   L. "Point of Common Coupling" is the point where the Local EPS is connected to the RPU distribution system
   M. "Quick Closed" is a method of generation transfer which does not parallel or parallels for less than 100msec with the RPU's distribution system and has utility grade timers which limit the parallel duration to less than 100 msec with the RPU distribution system.
   N. "RPU" is Rochester Public Utilities
   O. "Technical Requirements" "is the Rochester Public Utilities Distributed Generation Interconnection Requirements".
   P. "Transmission System" means those facilities as defined by using the guidelines established by the Minnesota State Public Utilities Commission; "In

the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions" Docket No. E-015/M-99-1002.

2. Dispute Resolution

The following is the dispute resolution process to be followed for problems that occur with the implementation of this process.

A. Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.
B. In the event a dispute arises under this process, and if it cannot be resolved by the Parties within thirty (30) days after written notice of the dispute to the other Party, the Parties shall submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in the State of Minnesota. The Parties agree to participate in good faith in the mediation for a period of 90 days. If the parties are not successful in resolving their disputes through mediation, then the Parties may refer the dispute for resolution to the Minnesota Public Utilities Commission, which shall maintain continuing jurisdiction over this process

3. RPU Generation Interconnection Coordinator.

RPU shall designate a Generation Interconnection Coordinator(s) and this person or persons shall provide a single point of contact for an Applicant's questions on this Generation Interconnection process. This Generation Interconnection Coordinator will typically not be able to directly answer or resolve all of the issues involved in the review and implementation of the interconnection process and standards, but shall be available to provide coordination assistance with the Applicant.

4. Engineering Studies

During the process of design of a Generation System interconnection between a Generation System and RPU's distribution system, there are several studies which many need to be undertaken. On the Local EPS (Customers side of the interconnection) the addition of a Generation System may increase the fault current levels, even if the generation is never interconnected with the RPU distribution system. The Interconnection Customer may need to conduct a fault current analysis of the Local EPS in conjunction with adding the Generation System. The addition of the Generation System may also affect the RPU distribution system and special engineering studies may need to be undertaken looking at the RPU distribution system with the Generation System included. Appendix D, lists some of the issues that may need to receive further analysis for the Generation System interconnection.

While, it is not a straightforward process to identify which engineering studies are required, we can at least develop screening criteria to identify which Generation Systems may require further analysis. The following is the basic screening criteria to be used for this interconnection process.

A. Generation System total Nameplate Capacity does not exceed 5% of the radial circuit expected peak load. The peak load is the total expected load on the radial circuit when the other generators on that same radial circuit are not in operation.

B. The aggregate generation's total Nameplate Capacity, including all existing and proposed generation, does not exceed 25% of the radial circuit peak load and that total is also less than the radial circuit minimum load.

C. Generation System does not exceed 15% of the Annual Peak Load for the Line Section, which it will interconnect with. A Line Section is defined as that section of the distribution system between two sectionalizing devices in RPU's distribution system.

D. Generation System does not contribute more than 10% to the distribution circuit's maximum fault current at the point at the nearest interconnection with RPU's primary distribution voltage.

E. The proposed Generation System total Nameplate Capacity, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment to exceed 85 percent of the short circuit interrupting capability.

F. If the proposed Generation System is to be interconnected on a single-phase shared secondary, the aggregate generation Nameplate Capacity on the shared secondary, including the proposed generation, does not exceed 20kW.

G. Generation System will not be interconnected with a "networked" system

5. Scoping Meeting

During Step 2 of this process, the Applicant or RPU has the option to request a scoping meeting. The purpose of the scoping meeting shall be to discuss the Applicant's interconnection request and review the application filed. This scoping meeting is to be held so that each Party can gain a better understanding of the issues involved with the requested interconnection. RPU and Applicant shall bring to the meeting personnel, including system engineers, and other resources as may be reasonably required, to accomplish the purpose of the meeting. The Applicant shall not expect RPU to complete the preliminary review of the proposed Generation System at the scoping meeting. If a scoping meeting is requested, RPU shall schedule the scoping meeting within the 15 business day review period allowed for in Step 2. RPU shall then have an additional 5 days, after the completion of the scoping meeting, to complete the formal response required in Step 2. The Application fee shall cover RPU's costs for this scoping meeting. There shall be no additional charges imposed by RPU for this initial scoping meeting.

6. Insurance

A. At a minimum, in connection with the Interconnection Customer's performance of its duties and obligations under this Agreement, the Interconnection Customer shall maintain, during the term of the Agreement, general liability insurance, from a qualified insurance agency with a B+ or better rating by "Best" and with a combined single limit of not less then:

i. Two million dollars ($2,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is greater than 250kW.

ii. One million dollars ($1,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is between 40kW and 250kW.

iii. Three hundred thousand ($300,000) for each occurrence if the Gross Nameplate Rating of the Generation System is less than 40kW.

iv. Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under this agreement.

B. The general liability insurance required shall, by endorsement to the policy or policies, (a) include RPU as an additional insured; (b) contain a sever ability of interest clause or cross-liability clause; (c) provide that RPU shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to RPU prior to cancellation, termination, alteration, or material change of such insurance.

C. If the Generation System is connected to an account receiving residential service from RPU and it total generating capacity is smaller than 40kW, then the endorsements required in Section F.2 shall not apply.

D. The Interconnection Customer shall furnish the required insurance certificates and endorsements to RPU prior to the initial operation of the Generation System. Thereafter, RPU shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance.

E. Evidence of the insurance required in Section F.1. shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance maintained by RPU.

F. If the Interconnection Customer is self-insured with an established record of self-insurance, the Interconnection Customer may comply with the following in lieu of Section F.1 – 5:

G. Interconnection Customer shall provide to RPU, at least thirty (30) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under section F.1

H. If Interconnection Customer ceases to self-insure to the level required hereunder, or if the Interconnection Customer is unable to provide continuing evidence of its ability to self-insure, the Interconnection Customer agrees to immediately obtain the coverage required under section F.1.

I. Failure of the Interconnection Customer or RPU to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

7. Pre-Certification

The most important part of the process to interconnect generation with Local EPS and RPU is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence, is required by the State of Minnesota to be listed by a recognized testing and certification laboratory, for its intended purpose. Typically we see this as “UL” listed. Since Generation Systems have tended to be uniquely designed for each installation they have been designed and approved by Professional Engineers. This process has been set up to be able to deal with these uniquely designed systems. As the number of Generation Systems installed increase, vendors are working towards creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move towards “plug and play” installations. For this reason, this interconnection process recognizes the efficiently of “pre-certification” of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacture, tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929 shall be acceptable for interconnection without additional protection system requirements. An "equipment package" shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not required further design review, testing or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing ad listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by RPU.

The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to the RPU distribution system. An application will still need to be submitted and an interconnection review may still need to be performed, to determine the compatibility of the Generation System with the RPU distribution system.

8. Confidential Information

Except as otherwise agreed, each Party shall hold in confidence and shall not disclose confidential information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section) unless required to do so by any law or court order. Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which, in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.

9. Non-Warranty.
Neither by inspection, if any, or non-rejection, nor in any other way, does RPU give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Applicant or leased by the Applicant from third parties, including without limitation the Generation System and any structures, equipment, wires, appliances or devices pertinent thereto.

10. Required Documents

The chart below lists the documents required for each type and size of Generation System proposed for interconnection.

Find your type of Generation System interconnection, across the top, then follow the chart straight down, to determine what documents are required as part of the interconnection process.

GENERATION INTERCONNECTION DOCUMENT SUMMARY					
Open Transfer	Quick Closed Transfer	Soft Loading Transfer	Extended Parallel Operation		
			QF facility <40kW	Without Sales	With Sales
Interconnection Process (This document)					
RPU Distributed Generation Interconnection Requirements					
Generation Interconnection Application (Appendix B)					
		Engineering Data Submittal (Appendix C)			
			Interconnection Agreement (Interconnection Contracts)		
				MISO / FERC	
					PPA

Interconnection Process = “Rochester Public Utilities Interconnection Process” (This document)

Rochester Public Utilities Interconnection Requirements = Rochester Public Utilities document relating to interconnection requirements.

Generation Interconnection Application = The application form in Appendix B of this document.

Engineering Data Submittal = The Engineering Data Form/Agreement, which is attached as Appendix C of this document.

Interconnection Agreement = “Rochester Public Utility Interconnection Agreement for the Interconnection of Extended Parallel Distributed Generation Systems with Electric Utilities”, which is attached contained in Schedule 2, Interconnection Contracts for Distributed Generation.

MISO. = Midwest Independent System Operator, www.midwestiso.org

FERC = Federal Energy Regulatory Commission, www.ferc.gov
PPA = Power Purchase Agreement.

Process for Interconnection

Step 1 Application (By Applicant)

Once a decision has been made by the Applicant, that they would like to interconnect a Generation System with the RPU distribution system, the Applicant shall supply RPU with the following information:

A. Completed Generation Interconnection Application (Appendix B), including;
   i. One-line diagram showing;
      i. Protective relaying.
      ii. Point of Common Coupling.
   ii. Site plan of the proposed installation.
   iii. Proposed schedule of the installation.
B. Payment of the application fee, according to the following sliding scale.

Generation Interconnection Application Fees

Interconnection Type	< 20kW	>20kW & <250kW	>250kW & <500kW	> 500 kW & <1000kW	>1000 kW
Open Transfer	$0	$0	$0	$100	$100
Quick Closed	$0	$100	$100	$250	$500
Soft Loading	$100	$250	$500	$500	$1000
Extended Parallel (Pre Certified System)	$0	$250	$1000	$1000	$1500
Other Extended Parallel Systems	$100	$500	$1500	$1500	$1500

This application fee is to contribute to RPU's labor costs for administration, review of the design concept and preliminary engineering screening for the proposed Generation System interconnection.

For the Application Fees chart, above;
The size (kW) of the Generation System is the total maximum Nameplate Capacity of the Generation System.

Step 2 Preliminary Review (By RPU)

Within 15 business days of receipt of all the information listed in Step 1, RPU's Generation Interconnection Coordinator shall respond to the Applicant with the information listed below. (If the information required in Step 1 is not complete, the Applicant will be notified, within 10 business days of what is missing and no further review will be completed until the missing information is submitted. The 15-day clock will restart with the new submittal)

As part of Step 2 the proposed Generation System will be screened to see if additional Engineering Studies are required. The base screening criteria is listed in the general information section of this document.

A. A single point of contact with RPU for this project. (Generation Interconnection Coordinator)

B. Approval or rejection of the generation interconnection request.
   i. Rejection – RPU shall supply the technical reasons, with supporting information, for rejection of the interconnection Application.
   ii. Approval - An approved Application is valid for 6 months from the date of the approval. RPU's Generation Interconnection Coordinator may extend this time if requested by the Applicant

C. If additional specialized engineering studies are required for the proposed interconnection, the following information will be provided to the Applicant. Typical Engineering Studies are outlined in Appendix D. The costs to the Applicant, for these studies shall not exceed the values shown in the following table for pre-certified equipment.

Generation System Size	Engineering Study Maximum Costs
<20kW	$0
20kW – 100kW	$500
100kW – 250kW	$1000
>250kW or not pre-certified equipment	Actual costs

   i. General scope of the engineering studies required.
   ii. Estimated cost of the engineering studies.
   iii. Estimated duration of the engineering studies.
   iv. Additional information required to allow the completion of the engineering studies.
   v. Study authorization agreement.

D. Comments on the schedule provided.

E. If the rules of MISO (Midwest Independent System Operator) require that this interconnection request be processed through the MISO process, the Generation Interconnection Coordinator will notify the Applicant that the generation system is not eligible for review through the State of Minnesota process.

Step 3 Go-No Go Decision for Engineering Studies (By Applicant)

In this step, the Applicant will decide whether or not to proceed with the required engineering studies for the proposed generation interconnection. If no specialized engineering studies are required by RPU, then RPU and the Applicant will automatically skip this step.

If the Applicant decides NOT to proceed with the engineering studies, the Applicant shall notify RPU's Generation Interconnection Coordinator, so other generation interconnection requests in the queue are not adversely impacted. Should the Applicant decide to proceed, the Applicant shall provide the following to RPU's Generation Interconnection Coordinator:

1) Payment required by RPU for the specialized engineering studies.

2) Additional information requested by RPU to allow completion of the engineering studies.

Step 4 Engineering Studies (By RPU)
In this step, RPU will be completing the specialized engineering studies for the proposed generation interconnection, as outlined in Step 2. These studies should be completed in the time frame provided in step 2, by RPU. RPU shall make all reasonable efforts to complete the Engineering Studies within the time frames shown below. If additional time is required to complete the engineering studies the Generation Interconnection Coordinator shall notify the Applicant and provide the reasons for the time extension. Upon receipt of written notice to proceed, payment of applicable fee, and receipt of all engineering study information requested by RPU in step 2, RPU shall initiate the engineering studies.

Generation System Size	Engineering Study Completion
<20kW	20 working days
20kW – 250kW	30 working days
250kW – 1MW	40 working days
> 1MW	90 working days

Once it is known by RPU that the actual costs for the engineering studies will exceed the estimated amount by more than 25%, then the Applicant shall be notified. RPU shall then provide the reason(s) for the studies needing to exceed the original estimated amount and provide an updated estimate of the total cost for the engineering studies. The Applicant shall be given the option of either withdrawing the application, or paying the additional estimated amount to continue with the engineering studies.

Step 5 Study Results and Construction Estimates (By RPU)

Upon completion of the specialized engineering studies, or if none was necessary, the following information will be provided to the Applicant.

1) Results of the engineering studies, if needed.

2) Monitoring & control requirements for the proposed generation.

3) Special protection requirements for the Generation System interconnection.

4) Comments on the schedule proposed by the Applicant.

5) Distributed Generation distribution constrained credits available

6) Interconnection Agreement (if applicable).

7) Cost estimate and payment schedule for required RPU work, including, but not limited to;
   A. Labor costs related to the final design review.
   B. Labor & expense costs for attending meetings
   C. Required Dedicated Facilities and other RPU distribution system modification(s).
   D. Final acceptance testing costs.

Step 6 Final Go-No Go Decision (By Applicant)

In this step, the Applicant shall again have the opportunity to indicate whether or not they want to proceed with the proposed generation interconnection. If the decision is NOT to proceed, the Applicant will notify RPU's Generation Interconnection Coordinator, so that other generation interconnections in the queue are not adversely impacted. Should the Applicant decide to proceed, a more detailed design, if not already completed by the Applicant, must be done, and the following information is to be supplied to RPU's Generation Interconnection Coordinator:

1) Applicable up-front payment required by RPU, per Payment Schedule, provided in Step 5. (if applicable)

2) Signed Interconnection Agreement (if applicable).

3) Final proposed schedule, incorporating RPU's comments. The schedule of the project should include such milestones as foundations poured, equipment delivery dates, all conduit installed, cutover (energizing of the new switchgear/transfer switch), RPU's work, relays set and tested, preliminary vendor testing, final RPU acceptance testing, and any other major milestones.

4) Detailed one-line diagram of the Generation System, including the generator, transfer switch/switchgear, service entrance, lockable and visible disconnect, metering, protection and metering CT's / VT's, protective relaying and generator control system.

5) Detailed information on the proposed equipment, including wiring diagrams, models and types.

6) Proposed relay settings for all interconnection required relays.

7) Detailed site plan of the Generation System.

8) Drawing(s) showing the monitoring system (as required per table 5A and section 5 of the "Rochester Public Utilities Distributed Generation Interconnection Requirements". Including a drawing which shows the interface terminal block with RPU's monitoring system.

9) Proposed testing schedule and initial procedure, including;
   a) Time of day (after-hours testing required?).

b) Days required.
c) Testing steps proposed.

Step 7 Final Design Review (By RPU)

Within 15 business days of receipt of the information required in Step 6, RPU's Generation Interconnection Coordinator will provide the Applicant with an estimated time table for final review. If the information required in Step 6 is not complete, the Applicant will be notified, within 10 business days of what information is missing. No further review may be completed until the missing information is submitted. The 15-business day clock will restart with the new submittal. This final design review shall not take longer than 15 additional business days to complete, for a total of 30 business days.

During this step, RPU shall complete the review of the final Generation System design. If the final design has significant changes from the Generation System proposed on the original Application which invalidate the engineering studies or the preliminary engineering screening, the Generation System Interconnection Application request may be rejected by RPU and the Applicant may be requested to reapply with the revised design.

Upon completion of this step the Generation Interconnection Coordinator shall supply the following information to the Applicant.

1) Requested modifications or corrections of the detailed drawings provided by the Applicant.

2) Approval of and agreement with the Project Schedule. (This may need to be interactively discussed between the Parties, during this Step)

3) Final review of Distributed Generation Credit amount(s) (where applicable).

4) Initial testing procedure review comments. (Additional work on the testing process will occur during Step 8, once the actual equipment is identified)

Step 8 Order Equipment and Construction (By Both Parties)

The following activities shall be completed during this step. For larger installations this step will involve much interaction between the Parties. It is typical for approval drawings to be supplied by the Applicant to RPU for review and comments. It is also typical for RPU to require review and approval of the drawings that cover the interconnection equipment and interconnection protection system. If RPU also requires remote control and/or monitoring, those drawings are also exchanged for review and comment.

By the Applicant's personnel:
1) Ordering of Generation System equipment.
2) Installing Generation System.
3) Submit approval drawings for interconnection equipment and protection systems, as required by RPU.
4) Provide final relay settings provided to RPU.
5) Submit Completed and signed Engineering Data Submittal form.
6) Submit proof of insurance, as required by RPU interconnection agreements.

7) Submit required State of Minnesota electrical inspection forms (“blue Copy) filed with RPU.
8) Inspecting and functional testing Generation System components.
9) Work with RPU personnel and equipment vendor(s) to finalize the installation testing procedure.

By RPU personnel:

1) Ordering any necessary RPU equipment.
2) Installing and testing any required equipment.
3) Monitoring facilities.
4) Dedicated Equipment.
5) Assisting Applicant’s personnel with interconnection installation coordination issues
6) Providing review and input for testing procedures.

Step 9 Final Tests (By RPU/ Applicant)

(Due to equipment lead times and construction, a significant amount of time may take place between the execution of Step 8 and Step 9.) During this time the final test steps are developed and the construction of the facilities are completed.

Final acceptance testing will commence when all equipment has been installed, all contractor preliminary testing has been accomplished and all RPU preliminary testing of the monitoring and dedicated equipment is completed. One to three weeks prior to the start of the acceptance testing of the generation interconnection the Applicant shall provide, a report stating;

- that the Generation System meets all interconnection requirements.
- all contractor preliminary testing has been completed.
- the protective systems are functionally tested and ready.
- and provides a proposed date that the Generation System will be is ready to be energized and acceptance tested.

For non-type certified systems a Professional Electrical Engineer registered in the State of Minnesota is required to provide this formal report.

For smaller systems scheduling of this testing may be more flexible, as less testing time is required than for larger systems.

In many cases, this testing is done after hours to ensure no typical business-hour load is disturbed. If acceptance testing occurs after hours, RPU’s labor will be billed at overtime wages. During this testing, RPU will typically run three different tests. These tests can differ depending on which type of communication / monitoring system(s) RPU decides to install at the site.

For, problems created by RPU or any RPU equipment that arise during testing, RPU will fix the problem as soon as reasonably possible. If problems arise during testing which are caused by the Applicant or Applicant’s vendor or any vendor supplied or installed equipment, RPU will leave the project until the problem is resolved. Having the testing resume will then be subject to RPU personnel time and availability.

Step 10 (By RPU)

After all RPU's acceptance testing has been accomplished and all requirements are met, RPU shall provide written approval for normal operation of the Generation System interconnection, within 3 business days of successful completion of the acceptance tests.

Step 11 (By Applicant)

Within two (2) months of interconnection, the Applicant shall provide RPU with updated drawings and prints showing the Generation System as it were when approved for normal operation by RPU. The drawings shall include all changes which were made during construction and the testing process.

Attachments:

Attached are several documents which may be required for the interconnection process. They are as follows;

Appendix A:
Flow chart showing summary of the interconnection process.

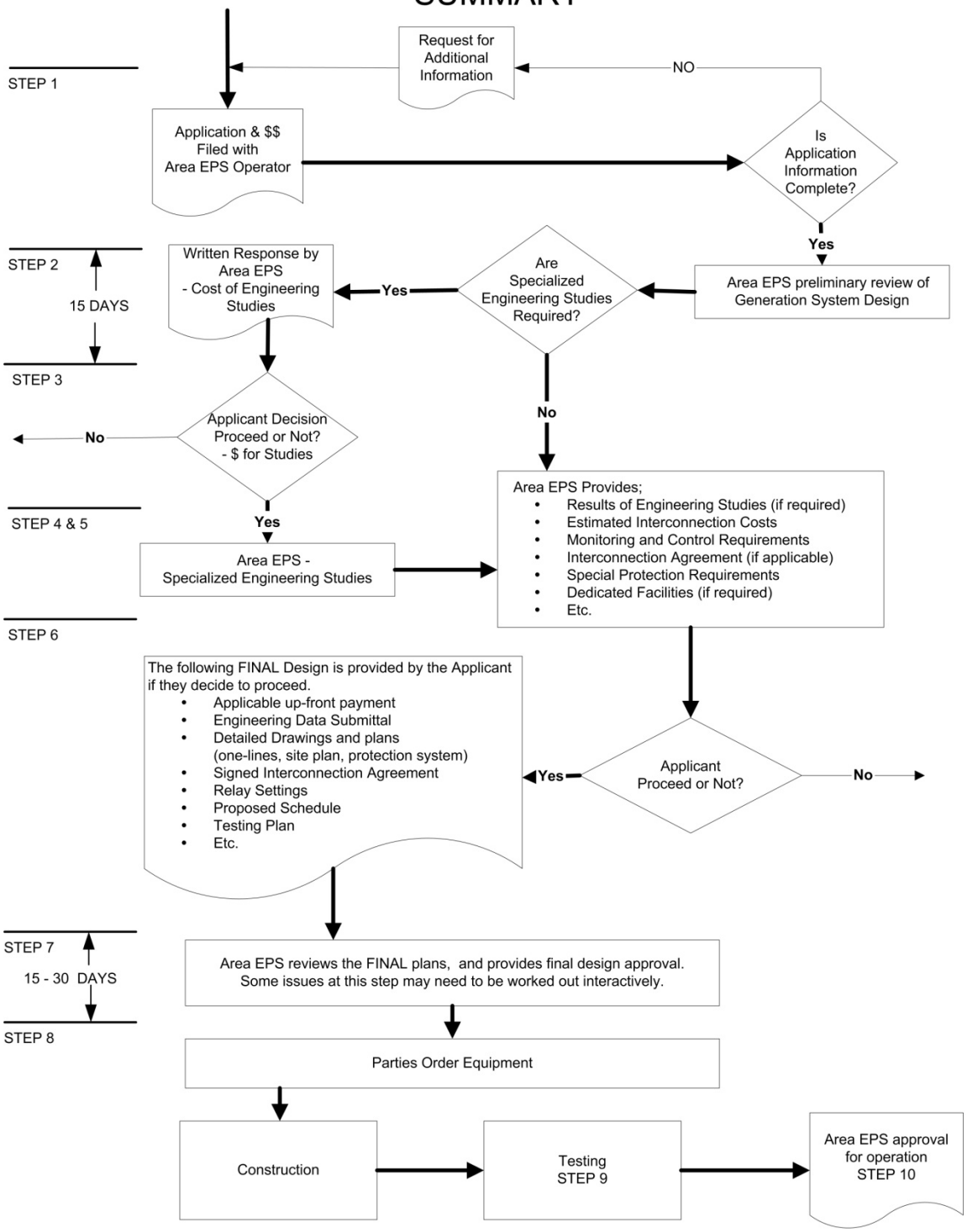
Appendix B:
Generation Interconnection Application Form.

Appendix C:
Engineering Data Submittal Form.

Appendix D:
Engineering Studies: Brief description of the types of possible Engineering Studies that may be required for the review of the Generation System interconnection.

Appendix A

DISTRIBUTED GENERATION INTERCONNECTION PROCESS SUMMARY



Appendix B

Generation Interconnection Application

WHO SHOULD FILE THIS APPLICATION: Anyone expressing interest to install generation which will interconnect with the RPU distribution system. This application should be completed and returned to the RPU Generation Interconnection Coordinator, in order to begin processing the request.

INFORMATION: This application is used by RPU to perform a preliminary interconnection review. The Applicant shall complete as much of the form as possible. The fields in BOLD are required to be completed to the best of the Applicant's ability. The Applicant will be contacted if additional information is required. The response may take up to 15 business days after receipt of all the required information.

COST: A payment to cover the application fee shall be included with this application. The application fee amount is outlined in the "Rochester Public Utilities Interconnection Process for Distributed Generation Systems".

OWNER/APPLICANT		
Company / Applicant's Name:		
Representative:	Phone Number:	FAX Number:
Title:		
Mailing Address:		
Email Address:		
LOCATION OF GENERATION SYSTEM INTERCONNECTION		
Street Address, legal description or GPS coordinates:		
PROJECT DESIGN / ENGINEERING (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		
ELECTRICAL CONTRACTOR (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		
GENERATOR (Full Printed Copy of Generator Nameplate Shall be Submitted)		
Manufacturer:		Model:
Type (Synchronous Induction, Inverter, etc):		Phases: 1 or 3
Rated Output (Prime kW):	(Standby kW):	Frequency:
Rated Power Factor (%):	Rated Voltage (Volts):	Rated Current (Amperes):
Max Reactive Gen (kVAR):	Power Factor (pf):	
Positive Sequence Reactance:	Zero Sequence Reactance:	
Positive Sequence Resistance:	Zero Sequence Resistance:	
Subtransient Reactance:	Transient Reactance:	
Energy Source (gas, steam, hydro, wind, etc.)		

TYPE OF INTERCONNECTED OPERATION	
Interconnection / Transfer method: □ Open □ Quick Open □ Closed □ Soft Loading □ Inverter	
Proposed use of generation: (Check all that may apply) □ Peak Reduction □ Standby □ Energy Sales □ Cover Load	Duration Parallel: □ None □ Limited □ Continuous
Pre-Certified System: Yes / No (Circle one)	Exporting Energy Yes / No (Circle one)

ESTIMATED LOAD INFORMATION		
The following information will be used to help properly design the interconnection. This Information is not intended as a commitment or contract for billing purposes.		
Minimum anticipated load (generation not operating):	kW:	kVA:
Maximum anticipated load (generation not operating):	kW:	kVA:

ESTIMATED START/COMPLETION DATES	
Construction start date:	Completion (operational) date:

DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION
Attach a single line diagram showing the switchgear, transformers, and generation facilities. Give a general description of the manner of operation of the generation (cogeneration, closed-transition peak shaving, open-transition peak shaving, emergency power, etc.). Also, does the Applicant intend to sell power and energy or ancillary services and/or wheel power over RPU facilities? If there is an intent to sell power and energy, also define the target market.

SIGN OFF AREA:

With this Application, we are requesting RPU to review the proposed Generation System Interconnection. We request that RPU identifies the additional equipment and costs involved with the interconnection of this system and to provide a budgetary estimate of those costs. We understand that the estimated costs supplied by RPU, will be estimated using the information provided. We also agree that we will supply, as requested, additional information, to allow RPU to better review this proposed Generation System interconnection. We have read the "Rochester Public Utilities Distributed Generation Interconnection Requirements" and will design the Generation System and interconnection to meet those requirements.
Applicant Name (print):
Applicant Signature: Date:
SEND THIS COMPLETED & SIGNED APPLICATION AND ATTACHMENTS TO THE RPU GENERATION INTERCONNECTION COORDINATOR

Appendix C

Engineering Data Submittal
For the Interconnection of Distributed Generation

WHO SHOULD FILE THIS SUBMITTAL: Anyone in the final stages of interconnecting a Generation System with the RPU distribution system. This submittal shall be completed and provided to the RPU Generation Interconnection Coordinator during the design of the Generation System, as established in the "Rochester Public Utilities Interconnection Process for Distributed Generation Systems".

INFORMATION: This submittal is used to document the interconnected Generation System. The Applicant shall complete as much of the form as applicable. The Applicant will be contacted if additional information is required.

OWNER / APPLICANT		
Company / Applicant:		
Representative:	Phone Number:	FAX Number:
Title:		
Mailing Address:		
Email Address:		

PROPOSED LOCATION OF GENERATION SYSTEM INTERCONNECTION
Street Address, Legal Description or GPS coordinates:

PROJECT DESIGN / ENGINEERING (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

ELECTRICAL CONTRACTOR (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

TYPE OF INTERCONNECTED OPERATION	
Interconnection / Transfer method: □ Open □ Quick Open □ Closed □ Soft Loading □ Inverter	
Proposed use of generation: (Check all that may apply) □ Peak Reduction □ Standby □ Energy Sales □ Cover Load	Duration Parallel: □ None □ Limited □ Continuous
Pre-Certified System: Yes / No (Circle one)	Exporting Energy Yes / No (Circle one)

GENERATION SYSTEM OPERATION / MAINTENANCE CONTACT INFORMATION		
Maintenance Provider:	Phone #:	Pager #:
Operator Name:	Phone #:	Pager #:
Person to Contact before remote starting of units		
Contact Name:	Phone #:	Pager #:
	24hr Phone #:	

GENERATION SYSTEM OPERATING INFORMATION	
Fuel Capacity (gals):	Full Fuel Run-time (hrs):
Engine Cool Down Duration (Minutes):	Start time Delay on Load Shed signal:
Start Time Delay on Outage (Seconds):	

ESTIMATED LOAD		
The following information will be used to help properly design the interconnection. This Information is not intended as a commitment or contract for billing purposes.		
Minimum anticipated load (generation not operating):	kW:	kVA:
Maximum anticipated load (generation not operating):	kW:	kVA:

REQUESTED CONSTRUCTION START/COMPLETION DATES	
Design Completion:	
Construction Start Date:	
Footings in place:	
Primary Wiring Completion:	
Control Wiring Completion:	
Start Acceptance Testing:	
Generation operational (In-service):	

(Complete all applicable items, Copy this page as required for additional generators)			
SYNCHRONOUS GENERATOR (if applicable)			
Unit Number:	Total number of units with listed specifications on site:		
Manufacturer:	Type:	Phases: 1 or 3	
Serial Number (each)	Date of manufacture:	Speed (RPM):	Freq. (Hz);
Rated Output (each unit) kW Standby:	kW Prime:	kVA:	
Rated Power Factor (%):	Rated Voltage(Volts):	Rated Current (Amperes):	
Field Voltage (Volts):	Field Current (Amperes):	Motoring Power (kW):	
Synchronous Reactance (Xd):	% on	kVA base	
Transient Reactance (X'd):	% on	kVA base	
Subtransient Reactance (X"d):	% on	kVA base	
Negative Sequence Reactance (Xs):	% on	kVA base	
Zero Sequence Reactance (Xo):	% on	kVA base	
Neutral Grounding Resistor (if applicable):			
I 2t or K (heating time constant):			
Exciter data:			
Governor data: Additional Information:			

INDUCTION GENERATOR (if applicable)	
Rotor Resistance (Rr): Ohms Rotor Reactance (Xr): Ohms Magnetizing Reactance (Xm): Ohms	Stator Resistance (Rs): Ohms Stator Reactance (Xs): Ohms Short Circuit Reactance (Xd"): Ohms
Design Letter:	Frame Size:
Exciting Current:	Temp Rise (deg C°):
Rated Output (kW):	
Reactive Power Required: kVars (no Load)	kVars (full load)
If this is a wound-rotor machine, describe any external equipment to be connected (resistor, rheostat, power converter, etc.) to rotor circuit, and circuit configuration. Describe ability, if any, to adjust generator reactive output to provide power system voltage regulation.	
Additional Information:	

PRIME MOVER (Complete all applicable items)		
Unit Number:	Type:	
Manufacturer:		
Serial Number:		Date of Manufacture:
H.P. Rated:	H.P. Max:	Inertia Constant: lb.-ft.2
Energy Source (hydro, steam, wind, wind etc.):		

INTERCONNECTION (STEP-UP) TRANSFORMER (If applicable)		
Manufacturer:	kVA:	
Date of Manufacture:	Serial Number:	
High Voltage: kV	Connection: delta wye	Neutral solidly grounded?
Low Voltage: kV	Connection: delta wye	Neutral solidly grounded?
Transformer Impedance (Z):	% on	kVA base
Transformer Resistance (R):	% on	kVA base
Transformer Reactance (X):	% on	kVA base
Neutral Grounding Resistor (if applicable)		

TRANSFER SWITCH (If applicable)	
Model Number:	Type:
Manufacturer:	Rating(amps):

INVERTER (If applicable)	
Manufacturer:	Model:
Rated Power Factor (%): Rated Voltage (Volts): Rated Current (Amperes):	
Inverter Type (ferroresonant, step, pulse-width modulation, etc.):	
Type of Commutation: forced line	Minimum Short Circuit Ratio required:
Minimum voltage for successful commutation:	
Current Harmonic Distortion	Maximum Individual Harmonic (%): Maximum Total Harmonic Distortion (%):
Voltage Harmonic Distortion	Maximum Individual Harmonic (%): Maximum Total Harmonic Distortion (%):
Describe capability, if any, to adjust reactive output to provide voltage regulation:	
NOTE: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.	

POWER CIRCUIT BREAKER (if applicable)					
Manufacturer:		Model:			
Rated Voltage (kilovolts):		Rated Ampacity (Amperes):			
Interrupting Rating (Amperes):		BIL Rating:			
Interrupting Medium (vacuum, oil, gas, etc.)		Insulating Medium (vacuum, oil, gas, etc.)			
Control Voltage (Closing):	(Volts)	AC	DC		
Control Voltage (Tripping):	(Volts)	AC	DC	Battery	Charged Capacitor
Close Energy (circle one):	Spring	Motor	Hydraulic	Pneumatic	Other
Trip Energy (circle one):	Spring	Motor	Hydraulic	Pneumatic	Other
Bushing Current Transformers (Max. ratio):			Relay Accuracy Class:		
CT'S Multi Ratio? (circle one); No / Yes:		(Available taps):			

MISCELLANEOUS (Use this area and any additional sheets for applicable notes and comments)

SIGN OFF AREA
This Engineering Data Submittal documents the equipment and design of the Generation System. We agree to supply RPU with an updated Engineering Data Submittal any time significant changes are made in the equipment used or the design of the proposed Generation System. The Applicant agrees to design, operate and maintain the Generation System within the requirements set forth by the "Rochester Public Utilities Distributed Generation Interconnection Requirements".
Applicant Name (print):
Applicant Signature: Date:
SEND THIS COMPLETED & SIGNED ENGINEERING DATA SUBMITTAL AND ANY ATTACHMENTS TO THE RPU GENERATION INTERCONNECTION COORDINATOR

APPENDIX D

Engineering Studies

For the engineering studies there are two main parts of the study: 1. Does the distributed generator cause a problem? and 2. What would it cost to make a change to handle the problem? The first question is relatively straightforward to determine as the RPU Engineer reviews the proposed installation. The second question typically has multiple alternatives and can turn into an iterative process. This iterative process can become quite large for more complex generation installations. For the Engineer there is no "cook book" solution which can be applied.

For some of the large generation installations and/or the more complex interconnections RPU may suggest dividing up the engineering studies into the two parts; identify the scope of the problems and attempt to identify solutions to resolve the problems. By splitting the engineering studies into two steps, it will allow for the Applicant to see the problems identified and to provide the Applicant the ability to remove the request for interconnection if the problems are too large and expensive to resolve. This would then save the additional costs to the Applicant for the more expensive engineering studies; to identity ways to resolve the problem(s).

This appendix provides an overview of some of the main issues that are looked at during the engineering study process. Every interconnection has its unique issues, such as relative strength of the distribution system, ratio of the generation size to the existing area loads, etc. Thus many of the generation interconnections will require further review of one or several of the issues listed.

1) Short circuit analysis – the system is studied to make sure that the addition of the generation will not over stress any RPU equipment and that equipment will still be able to clear during a fault. It is expected that the Applicant will complete their own short circuit analysis on their equipment to ensure that the addition of the generation system does not overstress the Applicant's electrical equipment.

2) Power Flow and Voltage Drop
   a) Reviews potential islanding of the generation
   b) Will RPU Equipment be overloaded
      i) Under normal operation?
      ii) Under contingent operation? With backfeeds?

3) Flicker Analysis –
   a) Will the operation of the generation cause voltage swings?
      i) When it loads up? When it off loads?
   b) How will the generation interact with RPU voltage regulation?
   c) Will RPU capacitor switching affect the generation while on-line?

4) Protection Coordination
   a) Reclosing issues – this is where the reclosing for the distribution system and transmission system are looked at to see if the Generation System protection

can be set up to ensure that it will clear from the distribution system before the feeder is reenergized.

b) Is voltage supervision of reclosing needed?
c) Is transfer-trip required?
d) Do we need to modify the existing protection systems? Existing settings?
e) At which points do we need “out of sync” protection?
f) Is the proposed interconnection protection system sufficient to sense a problem on the RPU system?
g) Are there protection problems created by the step-up transformer?

5) Grounding Reviews
   a) Does the proposed grounding system for the Generation System meet the requirements of the NESC (National Electrical Safety Code) and the NEC (National Electric Code)?

6) System Operation Impact.
   a) Are special operating procedures needed with the addition of the generation?
   b) Reclosing and out of sync operation of facilities.
   c) What limitations need to be placed on the operation of the generation?
   d) Operational VAR requirement.

March 16, 2018

ROCHESTER PUBLIC UTILITIES

Schedule 3c

INTERCONNECTION REQUIREMENTS

Distribution Connected
Distributed Generation Systems

(40kW – 10MW)

(Version 1.2)

Revision History

Date	Revision Description	Version #	Revised by
8/2/11	Original version of the document	1.0	RLA
6/7/12	Modified Cover page, Revision History page, Forward page and the section on Metering	1.1	RLA
3/16/2018	Made Schedule 3C	1.2	SJC

Rochester Public Utilities
Interconnection Requirements
For Distributed Generation Systems

TABLE OF CONTENTS

Foreword

Electric distribution system connected generation units span a wide range of sizes and electrical characteristics. Electrical distribution system design varies widely from that required to serve the rural customer to that needed to serve the large commercial customer. With so many variations possible, it becomes complex and difficult to create one interconnection standard that fits all generation interconnection situations.

In establishing a generation interconnection standard there are three main issues that must be addressed; Safety, Economics and Reliability.

The first and most important issue is safety; the safety of the general public and of the employees working on the electrical systems. This standard establishes the technical requirements that must be met to ensure the safety of the general public and of the Rochester Public Utility (RPU) employees. Typically designing the interconnection system for the safety of the general public will also provide protection for the interconnected equipment.

The second issue is economics; the interconnection design must be affordable to build. The interconnection standard must be developed so that only those items, that are necessary to meet safety and reliability, are included in the requirements. This standard sets the benchmark for the minimum required equipment. If it is not needed, it will not be required.

The third issue is reliability; the generation system must be designed and interconnected such that the reliability and the service quality for all customers of the electrical power systems are not compromised. This applies to all electrical systems not just the RPU distribution system.

Many generation interconnection standards exist or are in draft form. The IEEE, FERC and many states have been working on generation interconnection standards. There are other standards such as the National Electrical Code (NEC) that, establish requirements for electrical installations. The NEC requirements are in addition to this standard. This standard is designed to document the requirements where the NEC has left the establishment of the standard to “the authority having jurisdiction” or to cover issues which are not covered in other national standards.

This standard covers installations, with an aggregated capacity of 10MW’s or less. Many of the requirements in this document do not apply to small, 40kW or less generation installations. As an aid to the small, distributed generation customer, these small unit interconnection requirements have been extracted from this full standard and are available as a separate, simplified document.

1. Introduction

This standard has been developed to document the technical requirements for the interconnection between a Generation System and RPU's distribution system. This standard covers 3 phase Generation Systems with an aggregate capacity of 10 MW's or less and single phase Generation Systems with a aggregate capacity of 40kW or less at the Point of Common Coupling. This standard covers Generation Systems that are interconnected with RPU's distribution facilities. This standard does not cover Generation Systems that are directly interconnected with RPU's transmission system. Contact RPU for their Transmission System interconnection standards.

While, this standard provides the technical requirements for interconnecting a Generation System with a typical radial distribution system, it is important to note that there are some unique situations which have special interconnection needs. One example of a unique situation would be one operated as a "networked" system. This standard does not cover the additional special requirements of those systems. The Interconnection Customer must contact RPU to make sure that the Generation System is not proposed to be interconnected with a unique situation. If the planned interconnection is with a unique situation, the Interconnection Customer must obtain the additional requirements for interconnecting with RPU.

RPU has the right to limit the maximum size of any Generation System or number of Generation Systems that, may want to interconnect, if the Generation System would reduce the reliability to the other customers connected to the RPU distribution system.

This standard only covers the technical requirements and does not cover the interconnection process from the planning of a project through approval and construction. Please read the companion document "Rochester Public Utilities Interconnection Process for Distributed Generation Systems" for the description of the procedure to follow and a generic version of the forms to submit. It is important to also get copies of RPU's tariff's concerning generation interconnection which will include rates, costs and standard interconnection agreements. The earlier the Interconnection Customer gets RPU involved in the planning and design of the Generation System interconnection the smoother the process will go.

A) Definitions

The definitions defined in the "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems" (1547 Draft Ver. 11) apply to this document as well. The following definitions are in addition to the ones defined in IEEE 1547 , or are repeated from the IEEE 1547 standard.

i) "Generation" any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.
ii) "Generation System" the interconnected Distributed Generation(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.
iii) "Interconnection Customer" the party or parties who are responsible for meeting the requirements of this standard. This could be the Generation System applicant, installer, designer, owner or operator.
iv) "Local EPS" an electric power system (EPS) contained entirely within a single premises or group of premises.
v) "Point of Common Coupling" the point where the Local EPS is connected to the RPU distribution system.
vi) "Transmission System", are those facilities as defined by using the guidelines established by the Minnesota State Public Utilities Commission; "In the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions" Docket No. E-015/M-99-1002.
vii) "Type-Certified" Generation paralleling equipment that is listed by an OSHA listed national testing laboratory as having met the applicable type testing requirement of UL 1741. At the time is document was prepared this was the only national standard available for certification of generation transfer switch equipment. This definition does not preclude other forms of type-certification if agreeable to the Area EPS operator.

B) Interconnection Requirements Goals

i) This standard defines the minimum technical requirements for the implementation of the electrical interconnection between the Generation System and the RPU distribution system. It does not define the overall requirements for the Generation System. The requirements in this standard are intended to achieve the following:

ii) Ensure the safety of utility personnel and contractors working on the electrical power system.

iii) Ensure the safety of utility customers and the general public.

iv) Protect and minimize the possible damage to the electrical power system and other customer's property.

v) Ensure proper operation to minimize adverse operating conditions on the electrical power system.

C) Protection

The Generation System and Point of Common Coupling shall be designed with proper protective devices to promptly and automatically disconnect the Generation from the RPU distribution system in the event of a fault or other system abnormality. The type of protection required will be determined by:

i) Size and type of the generating equipment.
ii) The method of connecting and disconnecting the Generation System from the RPU distribution system.
iii) The location of generating equipment on the RPU distribution system.

D) RPU Modifications

Depending upon the match between the Generation System, the RPU distribution system and how the Generation System is operated, certain modifications and/or additions may be required to the existing RPU distribution system with the addition of the Generation System. To the extent possible, this standard describes the modifications which could be necessary to the RPU distribution system for different types of Generation Systems. For some unique interconnections, additional and/or different protective devices, system modifications and/or additions will be required by RPU; In these cases RPU will provide the final determination of the required modifications and/or additions. If any special requirements are necessary they will be identified by RPU during the application review process.

E) Generation System Protection

The Interconnection Customer is solely responsible for providing protection for the Generation System. Protection systems required in this standard, are structured to protect the RPU distribution system and the public. The Generation System Protection is not provided for in this standard. Additional protection equipment may be required to ensure proper operation for the Generation System. This is especially true while operating disconnected, from the RPU distribution system. RPU does not assume responsibility for protection of the Generation System equipment or of any portion Local EPS.

F) Electrical Code Compliance

Interconnection Customer shall be responsible for complying with all applicable local, independent, state and federal codes such as building codes, National Electric Code (NEC), National Electrical Safety Code (NESC) and noise and emissions standards. As required by Minnesota State law, RPU will require proof of complying with the National Electrical Code before the interconnection is made, through installation approval by an electrical inspector recognized by the Minnesota State Board of Electricity.

The Interconnection Customer's Generation System and installation shall comply with latest revisions of the ANSI/IEEE standards applicable to the installation, especially IEEE 1547; "Standard for Interconnecting Distributed Resources with Electric Power Systems". See the reference section in this document for a partial list of the standards which apply to the generation installations covered by this standard.

2. References

The following standards shall be used in conjunction with this standard. When the stated version of the following standards is superseded by an approved revision then that revision shall apply.

IEEE Std 100-2000, “IEEE Standard Dictionary of Electrical and Electronic Terms”
IEEE Std 519-1992, “IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems”
IEEE Std 929-2000,”IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems”.
IEEE Std 1547, “IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems”
IEEE Std C37.90.1-1989 (1995), “IEEE Standard Surge Withstand Capability (SEC) Tests for Protective Relays and Relay Systems”.

IEEE Std C37.90.2 (1995), “IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers”.

IEEE Std C62.41.2-2002, “IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits”

IEEE Std C62.42-1992 (2002), “IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and less) AC Power Circuits”

ANSI C84.1-1995,”Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)”

ANSI/IEEE 446-1995, “Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications”.

ANSI/IEEE Standard 142-1991, “IEEE Recommended Practice for Grounding of Industrial an Commercial Power Systems – Green Book”,

UL Std. 1741 “Inverters, Converters, and Controllers for use in Independent Power Systems”

NEC – “National Electrical Code”, National Fire Protection Association (NFPA), NFPA-70-2002.

NESC – “National Electrical Safety Code”. ANSI C2-2000, Published by the Institute of Electrical and Electronics Engineers, Inc.

3. Types of Interconnections

A) The manner in which the Generation System is connected to and disconnected from the RPU distribution system can vary. Most transfer systems normally operate using one of the following five methods of transferring the load from the RPU distribution system to the Generation System.

B) If a transfer system is installed which has a user accessible selection of several transfer modes, the transfer mode that has the greatest protection requirements will establish the protection requirements for that transfer system.

i) Open Transition (Break-Before-Make) Transfer Switch – With this transfer switch, the load to be supplied from the Distributed Generation is first disconnected from the RPU distribution system and then connected to the Generation. This transfer can be relatively quick, but voltage and frequency excursions are to be expected during transfer. Computer equipment and other sensitive equipment will shut down and reset. The transfer switch typically consists of a standard UL approved transfer switch with mechanical interlocks between the two source contactors that drop the RPU distribution system source before the Distributed Generation is connected to supply the load.

(1) To qualify as an Open Transition switch and the limited protective requirements, mechanical interlocks are required between the two source contacts. This is required to ensure that one of the contacts is always open and the Generation System is never operated in parallel with the RPU distribution system. If the mechanical interlock is not present, the protection requirements are as if the switch is a closed transition switch.

(2) As a practical point of application, this type of transfer switch is typically used for loads less than 500kW. This is due to possible voltage flicker problems created on the RPU distribution system, when the load is removed from or returned to the RPU source. Depending upon RPU's distribution systems stiffness, this level may be larger or smaller than the 500kW level.

(3) Figure 1 at the end of this document provides a typical one-line of this type of installation.

ii) Quick Open Transition (Break-Before-Make) Transfer Switch – The load to be supplied from the Distributed Generation is first disconnected from the RPU distribution system and then connected to the Distributed Generation, similar to the open transition. However, this transition is typically much faster (under 500 ms) than the conventional open transition transfer operation. Voltage and frequency excursions will still occur, but some computer equipment and other sensitive equipment will typically not be affected with a properly designed system. The transfer switch consists of a standard UL approved transfer switch, with mechanical interlocks between the two source contacts that drop the RPU distribution system source before the Distributed Generation is connected to supply the load.

(1) Mechanical interlocks are required between the two source contacts to ensure that one of the contacts is always open. If the mechanical interlock is not present, the protection requirements are as if the switch is a closed transition switch.

(2) As a practical point of application this type of transfer switch is typically used for loads less than 500kW. This is due to possible voltage flicker problems created on the RPU distribution system, when the load is removed from or returned to the RPU distribution system source. Depending upon RPU's distribution systems stiffness, this level may be larger or smaller than the 500kW level.

(3) Figure 2 at the end of this document provides a typical one-line of this type of installation and shows the required protective elements.

iii) Closed Transition (Make-Before-Break) Transfer Switch – The Distributed Generation is synchronized with the RPU distribution system prior to the transfer occurring. The transfer switch then parallels with the RPU distribution system for a short time (100 msec. or less) and then the Generation System and load is disconnect from the RPU distribution system. This transfer is less disruptive than the Quick Open Transition because it allows the Distributed Generation a brief time to pick up the load before the support of the RPU distribution system is lost. With this type of transfer, the load is always being supplied by the RPU distribution system or the Distributed Generation.

(1) As a practical point of application this type of transfer switch is typically used for loads less than 500kW. This is due to possible voltage flicker problems created on the RPU distribution system, when the load is removed from or returned to the RPU distribution system source. Depending upon RPU's distribution system stiffness, this level may be larger or smaller than the 500kW level.

(2) Figure 2 at the end of this document provides a typical one-line of this type of installation and shows the required protective elements. The closed transition switch must include a separate parallel time limit relay, which is not part of the generation control PLC and trips the generation from the system for a failure of the transfer switch and/or the transfer switch controls.

iv) Soft Loading Transfer Switch

(1) With Limited Parallel Operation – The Distributed Generation is paralleled with the RPU distribution system for a limited amount of time (generally less than 1-2 minutes) to gradually transfer the load from the RPU distribution system to the Generation System. This minimizes the voltage and frequency problems, by softly loading and unloading the Generation System.

(a) The maximum parallel operation shall be controlled, via a parallel timing limit relay (62PL). This parallel time limit relay shall be a separate relay and not part of the generation control PLC.
(b) Protective Relaying is required as described in section 6.

(c) Figure 3 at the end of this document provide typical one-line diagrams of this type of installation and show the required protective elements.

(2) With Extended Parallel Operation – The Generation System is paralleled with the RPU distribution system in continuous operation. Special design, coordination and agreements are required before any extended parallel operation will be permitted. The RPU interconnection study will identify the issues involved.

(a) Any anticipated use in the extended parallel mode requires special agreements and special protection coordination.

(b) Protective Relaying is required as described in section 6.

(c) Figure 4 at the end of this document provides a typical one-line for this type of interconnection. It must be emphasized that this is a typical installations only and final installations may vary from the examples shown due to transformer connections, breaker configuration, etc.

v) Inverter Connection

This is a continuous parallel connection with the system. Small Generation Systems may utilize inverters to interface to the RPU distribution system. Solar, wind and fuel cells are some examples of Generation which typically use inverters to connect to the RPU distribution system. The design of such inverters shall either contain all necessary protection to prevent unintentional islanding, or the Interconnection Customer shall install conventional protection to affect the same protection. All required protective elements for a soft-loading transfer switch apply to an inverter connection. Figure 5 at the end of this document, shows a typical inverter interconnection.

(1) Inverter Certification – Prior to installation, the inverter shall be Type-Certified for interconnection to the electrical power system. The certification will confirm its anti-islanding protection and power quality related levels at the Point of Common Coupling. Also, utility compatibility, electric shock hazard and fire safety are approved through UL listing of the model. Once this Type Certification is completed for that specific model, additional design review of the inverter should not be necessary by RPU.

(2) For three-phase operation, the inverter control must also be able to detect and separate for the loss of one phase. Larger inverters will still require custom protection settings, which must be calculated and designed to be compatible with the RPU distribution system.

(3) A visible disconnect is required for safely isolating the Distributed Generation when connecting with an inverter. The inverter shall not be used as a safety isolation device.

(4) When banks of inverter systems are installed at one location, a design review by RPU must be performed to determine any additional protection systems, metering or other needs. The issues will be identified by RPU during the interconnection study process

4. Interconnection Issues and Technical Requirements

A) General Requirements - The following requirements apply to all interconnected generating equipment. RPU shall be the source side and the customer's system shall be the load side in the following interconnection requirements.

i) Visible Disconnect - A disconnecting device shall be installed to electrically isolate the RPU distribution system from the Generation System. The only exception for the installation of a visible disconnect is if the generation is interconnected via a mechanically interlocked open transfer switch and installed per the NEC (702.6) “so as to prevent the inadvertent interconnection of normal and alternate sources of supply in any operation of the transfer equipment.”

The visible disconnect shall provide a visible air gap between Interconnection Customer’s Generation and RPU’s distribution system in order to establish the safety isolation required for work on RPU’s distribution system. This disconnecting device shall be readily accessible 24 hours per day by RPU field personnel and shall be capable of padlocking by RPU field personnel. The disconnecting device shall be lockable in the open position.

The visible disconnect shall be a UL approved or National Electrical Manufacture’s Association approved, manual safety disconnect switch of adequate ampere capacity. The visible disconnect shall not open the neutral when the switch is open. A draw-out type circuit breaker can be used as a visual open.

The visible disconnect shall be labeled, as required by RPU to inform RPU field personnel.

ii) Energization of Equipment by Generation System – The Generation System shall not energize a de-energized RPU distribution system. The Interconnection Customer shall install the necessary padlocking (lockable) devices on equipment to prevent the energization of a de-energized electrical power system. Lock out relays shall automatically block the closing of breakers or transfer switches on to a de-energized RPU distribution system.

iii) Power Factor - The power factor of the Generation System and connected load shall be as follows;

(1) Inverter Based interconnections – shall operate at a power factor of no less than 95%.at the inverter terminals.

(2) Limited Parallel Generation Systems, such as closed transfer or soft-loading transfer systems shall operate at a power factor of no less than 90%, during the period when the Generation System is parallel with the RPU distribution system, as measured at the Point of Common Coupling.

(3) Extended Parallel Generation Systems shall be designed to be capable of operating between 90% lagging and 95% leading. These Generation Systems shall normally operate near unity power factor (+/-98%) or as mutually agreed between RPU and the Interconnection Customer.

iv) Grounding Issues

(1) Grounding of sufficient size to handle the maximum available ground fault current shall be designed and installed to limit step and touch potentials to safe levels as set forth in “IEEE Guide for Safety in AC Substation Grounding”, ANSI/IEEE Standard 80.

(2) It is the responsibility of the Interconnection Customer to provide the required grounding for the Generation System. A good standard for this is the IEEE Std. 142-1991 “Grounding of Industrial and Commercial Power Systems”

(3) All electrical equipment shall be grounded in accordance with local, state and federal electrical and safety codes and applicable standards

v) Sales to RPU or other parties – transportation of energy on the transmission system is regulated by the area reliability council and FERC. Those contractual requirements are not included in this standard. RPU will provide these additional contractual requirements during the interconnection approval process.

B) For Inverter based, closed transfer and soft loading interconnections - The following additional requirements apply:

i) Fault and Line Clearing - The Generation System shall be removed from the RPU distribution system for any faults, or outages occurring on the electrical circuit serving the Generation System

ii) Operating Limits in order to minimize objectionable and adverse operating conditions on the electric service provided to other customers connected to the RPU distribution system, the Generation System shall meet the Voltage, Frequency, Harmonic and Flicker operating criteria as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with the RPU distribution system.

If the Generation System creates voltage changes greater than 4% on the RPU distribution system, it is the responsibility of the Interconnection Customer to correct these voltage sag/swell problems caused by the operation of the Generation System. If the operation of the interconnected Generation System causes flicker, which causes problems for others customer’s interconnected to the RPU distribution system, the Interconnection Customer is responsible for correcting the problem.

iii) Flicker - The operation of Generation System is not allowed to produce excessive flicker to adjacent customers. See the IEEE 1547 standard for a more complete discussion on this requirement.

The stiffer the RPU distribution system, the larger a block load change that it will be able to handle. For any of the transfer systems the RPU distribution system voltage shall not drop or rise greater than 4% when the load is added or removed from the RPU distribution system. It is important to note, that if another interconnected customer complains about the voltage change caused by the Generation System, even if the voltage change is below the 4% level, it is the Interconnection Customer’s responsibility to correct or pay for correcting the problem. Utility experience has shown that customers have seldom objected to instantaneous voltage changes of less than 2% on the RPU distribution system, so RPU uses a 2% design criteria

iv) Interference - The Interconnection Customer shall disconnect the Distributed Generation from the RPU distribution system if the Distributed Generation causes radio, television or electrical service interference to other customers, via RPU or interference with the operation of RPU distribution system. The Interconnection

Customer shall either effect repairs to the Generation System or reimburse RPU for the cost of any required RPU distribution system modifications due to the interference.

v) Synchronization of Customer Generation.

(1) An automatic synchronizer with synch-check relaying is required for unattended automatic quick open transition, closed transition or soft loading transfer systems.

(2) To prevent unnecessary voltage fluctuations on the RPU distribution system, it is required that the synchronizing equipment be capable of closing the Distributed Generation into the RPU distribution system within the limits defined in IEEE 1547 . Actual settings shall be determined by the Registered Professional Engineer establishing the protective settings for the installation.

(3) Unintended Islanding – Under certain conditions with extended parallel operation, it would be possible for a part of the RPU distribution system to be disconnected from the rest of the RPU distribution system and have the Generation System continue to operate and provide power to a portion of the isolated circuit. This condition is called “islanding”. It is not possible to successfully reconnect the energized isolated circuit to the rest of the RPU distribution system since there are no synchronizing controls associated with all of the possible locations of disconnection. Therefore, it is a requirement that the Generation System be automatically disconnected from the RPU distribution system immediately by protective relays for any condition that would cause the RPU distribution system to be de-energized. The Generation System must either isolate with the customer’s load or trip. The Generation System must also be blocked from closing back into the RPU distribution system until the RPU distribution system is reenergized and the RPU distribution system voltage is within Range B of ANSI C84.1 Table 1 for a minimum of 1 minute. Depending upon the size of the Generation System it may be necessary to install direct transfer trip equipment from the RPU distribution system source(s) to remotely trip the generation interconnection to prevent islanding for certain conditions

vi) Disconnection – RPU may refuse to connect or may disconnect a Generation System from the RPU distribution system under the following conditions:

(1) Lack of approved Standard Application Form and Standard Interconnection Agreement.

(2) Termination of interconnection by mutual agreement.

(3) Non-Compliance with the technical or contractual requirements.

(4) System Emergency or for imminent danger to the public or RPU personnel (Safety).

(5) Routine maintenance, repairs and modifications to the RPU distribution system. RPU shall coordinate planned outages with the Interconnection Customer to the extent possible.

5. Generation Metering, Monitoring and Control

Metering, Monitoring and Control – Depending upon the method of interconnection and the size of the Generation System, there are different metering, monitoring and control requirements Table 5A is a table summarizing the metering, monitoring and control requirements..

Due to the variation in Generation Systems and RPU operational needs, the requirements for metering, monitoring and control listed in this document are the expected maximum requirements that RPU will apply to the Generation System. It is important to note that for some Generation System installations RPU may wave some of the requirements of this section if they are not needed. An example of this is with rural or low capacity feeders which require more monitoring then larger capacity, typically urban feeders.

Another factor which will affect the metering, monitoring and control requirements will be the tariff under which the Interconnection Customer is supplied by RPU. Table 5A has been written to cover most application, but some RPU tariffs may have greater or less metering, monitoring and control requirements then, as shown in Table 5A. .

TABLE 5A
Metering, Monitoring and Control Requirements

Generation System Capacity at Point of Common Coupling	Metering	Generation Remote Monitoring	Generation Remote Control
< 40 kW with all sales to RPU	Bi-Directional metering at the point of common coupling and a generation output meter.	None Required	None Required
< 40 kW with Sales to a party other than RPU	Recording metering on the Generation System and a separate recording meter on the load	Interconnection Customer supplied direct dial phone line.	None Required
40 – 250kW with limited parallel	Detented RPU Metering at the Point of Common Coupling	None Required	None Required
40 – 250kW with extended parallel	Recording metering on the Generation System and a separate recording meter on the load	Interconnection Customer supplied direct dial phone line. RPU to supply its own monitoring equipment	None Required
250 – 1000 kW with limited parallel	Detented RPU Metering at the Point of Common Coupling	Interconnection Customer supplied direct dial phone line and monitoring points available. See B (i)	None Required
250 – 1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load.	Required RPU remote monitoring system See B (i)	None Required
>1000 kW With limited parallel Operation	Detented RPU Metering at the Point of Common Coupling	Required RPU SCADA monitoring system. See B (i)	None required
>1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load.	Required RPU SCADA monitoring system See B (i)	Direct Control via SCADA by RPU of interface breaker.

"Detented" = A meter which is detented will record power flow in only one direction.

A) Metering

i) As shown in Table 5A the requirements for metering will depend up on the type of generation and the type of interconnection. For most installations, the requirement is a single point of metering at the Point of Common Coupling. RPU will install a special meter that is capable of measuring and recording energy flow in both directions, for three phase installations or two detented meters wired in series, for single phase installations. A dedicated - direct dial phone line may be required to be supplied to the meter for RPU's use to read the metering. Some monitoring may be done through the meter and the dedicated – direct dial phone line, so in many installations the remote monitoring and the meter reading can be done using the same dial-up phone line.

ii) Depending upon which tariff the Generation System and/or customer's load is being supplied under, additional metering requirements may result. Contact RPU for tariff requirements. In some cases, the direct dial-phone line requirement may be waived by RPU for smaller Generation Systems.

iii) RPU's revenue meters shall be supplied, owned and maintained by RPU. All voltage transformers (VT) and current transformers (CT), used for revenue metering shall be approved and/or supplied by RPU. RPU's standard practices for instrument transformer location and wiring shall be followed for the revenue metering.

iv) For Generation Systems that sell power and are greater than 40kW in size, separate metering of the generation and of the load is required. A single meter recording the power flow at the Point of Common Coupling for both the Generation and the load is not allowed by the rules under which the area transmission system is operated.

v) For Generation Systems which are less then 40kW in rated capacity and are qualified facilities under PURPA (Public Utilities Regulatory Power Act – Federal Gov. 1978), net metering is allowed and provides the generation system the ability to back feed the RPU distribution system at some times and bank that energy for use at other times. Some of the qualified facilities under PURPA are solar, wind, hydro, and biomass. For these net-metered installations, RPU may use a single meter to record the bi-directional flow or RPU may elect to use two detented meters, each one to record the flow of energy in one direction.

B) Monitoring (SCADA) is required as shown in table 5A. The need for monitoring is based on the need of the system control center to have the information necessary for the reliable operation of the RPU Distribution system. This remote monitoring is especially important during periods of abnormal and emergency operation.

The difference in Table 5A between remote monitoring and SCADA is that SCADA typically is a system that is in continuous communication with a central computer and provides updated values and status, to RPU, within several seconds of the changes in the field. Remote monitoring on the other hand will tend to provide updated values and status within minutes of the change in state of the field. Remote monitoring is typically less expensive to install and operate.

i) Where Remote Monitoring or SCADA is required, as shown in Table 5A, the following monitored and control points are required:

(1) Real and reactive power flow for each Generation System (kW and kVAR). Only required if separate metering of the Generation and the load is required,

otherwise #4 monitored at the point of Common Coupling will meet the requirements.

(2) Phase voltage representative of RPU's service to the facility.

(3) Status (open/close) of Distributed Generation and interconnection breaker(s) or if transfer switch is used, status of transfer switch(s).

(4) Customer load from RPU service (kW and kVAR).

(5) Control of interconnection breaker - if required by RPU.

When telemetry is required, the Interconnection Customer must provide the communications medium to RPU's Control Center. This could be radio, dedicated phone circuit or other form of communication. If a telephone circuit is used, the Interconnection Customer must also provide the telephone circuit protection. The Interconnection Customer shall coordinate the RTU (remote terminal unit) addition with RPU. RPU may require a specific RTU and/or protocol to match their SCADA or remote monitoring system.

6. Protective Devices and Systems

A) Protective devices required to permit safe and proper operation of the RPU distribution system while interconnected with customer's Generation System are shown in the figures at the end of this document. In general, an increased degree of protection is required for increased Distributed Generation size. This is due to the greater magnitude of short circuit currents and the potential impact to system stability from these installations. Medium and large installations require more sensitive and faster protection to minimize damage and ensure safety.

If a transfer system is installed which has a user accessible selection of several transfer modes, the transfer mode which has the greatest protection requirements will establish the protection requirements for that transfer system.

The Interconnection Customer shall provide protective devices and systems to detect the Voltage, Frequency, Harmonic and Flicker levels as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with the RPU distribution system. The Interconnection Customer shall be responsible for the purchase, installation, and maintenance of these devices. Discussion on the requirements for these protective devices and systems follows:

i) Relay settings

(1) If the Generation System is utilizing a Type-Certified system, such as a UL listed inverter a Professional Electrical Engineer is not required to review and approve the design of the interconnecting system. If the Generation System interconnecting device is not Type-Certified or if the Type-Certified Generation System interconnecting device has additional design modifications made, the Generation System control, the protective system, and the interconnecting device(s) shall be reviewed and approved by a Professional Electrical Engineer, registered in the State of Minnesota.

(2) A copy of the proposed protective relay settings shall be supplied to RPU for review and approval, to ensure proper coordination between the generation system and the RPU distribution system.

ii) Relays

(1) All equipment providing relaying functions shall meet or exceed ANSI/IEEE Standards for protective relays, i.e., C37.90, C37.90.1 and C37.90.2.

(2) Required relays that are not “draw-out” cased relays shall have test plugs or test switches installed to permit field testing and maintenance of the relay without unwiring or disassembling the equipment. Inverter based protection is excluded from this requirement for Generation Systems <40kW at the Point of Common Coupling.

(3) Three phase interconnections shall utilize three phase power relays, which monitor all three phases of voltage and current, unless so noted in the appendix one-lines.

(4) All relays shall be equipped with setting limit ranges at least as wide as specified in IEEE 1547 , and meet other requirements as specified in the RPU interconnect study. Setting limit ranges are not to be confused with the actual relay settings required for the proper operation of the installation. At a minimum, all protective systems shall meet the requirements established in IEEE 1547 .

(a) Over-current relays (IEEE Device 50/51 or 50/51V) shall operate to trip the protecting breaker at a level to ensure protection of the equipment and at a speed to allow proper coordination with other protective devices. For example, the over-current relay monitoring the interconnection breaker shall operate fast enough for a fault on the customer’s equipment, so that no protective devices will operate on the RPU distribution system. 51V is a voltage restrained or controlled over-current relay and may be required to provide proper coordination with the RPU distribution system.

(b) Over-voltage relays (IEEE Device 59) shall operate to trip the Distributed Generation per the requirements of IEEE 1547 .

(c) Under-voltage relays (IEEE Device 27) shall operate to trip the Distributed Generation per the requirements of IEEE 1547

(d) Over-frequency relays (IEEE Device 81O) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547 .

(e) Under-frequency relay (IEEE Device 81U) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547 . For Generation Systems with an aggregate capacity greater then 30kW, the Distribution Generation shall trip off-line when the frequency drops below 57.0-59.8 Hz. typically this is set at 59.5 Hz, with a trip time of 0.16 seconds, but coordination with the RPU distribution system is required for this setting.

RPU will provide the reference frequency of 60 Hz. The Distributed Generation control system must be used to match this reference. The protective relaying in the interconnection system will be expected to maintain the frequency of the output of the Generation.

(f) Reverse power relays (IEEE Device 32) (power flowing from the Generation System to the RPU distribution system) shall operate to trip the Distributed Generation off-line for a power flow to the system with a maximum time delay of 2.0 seconds.

(g) Lockout Relay (IEEE Device 86) is a mechanically locking device which is wired into the close circuit of a breaker or switch and when tripped will prevent any close signal from closing that device. This relay requires that a person manually resets the lockout relay before that device can be reclosed. These relays are used to ensure that a denergized system is not reenergized by automatic control action, and prevents a failed control from auto-reclosing an open breaker or switch.

(h) Transfer Trip – All Generation Systems are required to disconnect from the RPU distribution system when the RPU distribution system is disconnected from its source, to avoid unintentional islanding. With larger Generation Systems, which remain in parallel with the RPU distribution system, a transfer trip system may be required to sense the loss of the RPU source. When the RPU source is lost, a signal is sent to the Generation System to separate the Generation from the RPU distribution system. The size of the Generation System vs. the capacity and minimum loading on the feeder will dictate the need for transfer trip installation. The RPU interconnection study will identify the specific requirements.

If multiple RPU distribution system sources are available or multiple points of sectionalizing on the RPU distribution system, then more than one transfer trip system may be required. The RPU interconnection study will identify the specific requirements. For some installations the alternate RPU source(s) may not be utilized except in rare occasions. If this is the situation, the Interconnection Customer may elect to have the Generation System locked out when the alternate source(s) are utilized, if agreeable to RPU.

(i) Parallel limit timing relay (IEEE Device 62PL) set at a maximum of 120 seconds for soft transfer installations and set no longer then 100ms for quick transfer installations, shall trip the Distributed Generation circuit breaker on limited parallel interconnection systems. Power for the 62 PL relay must be independent of the transfer switch control power. The 62PL timing must be an independent device from the transfer control and shall not be part of the generation PLC or other control system.

TABLE 6A
SUMMARY OF RELAYING REQUIREMENTS

Type of Interconnection	Over-current (50/51)	Voltage (27/59)	Frequency (81 0/U)	Reverse Power (32)	Lockout (86)	Parallel Limit Timer	Sync-Check (25)	Transfer Trip
Open Transition Mechanically Interlocked (Fig. 1)	—	—	—	—	—	—	—	—
Quick Open Transition Mechanically Interlocked (Fig. 2)	—	—	—	—	Yes	Yes	Yes	—
Closed Transition (Fig. 2)	—	—	—	—	Yes	Yes	Yes	—
Soft Loading Limited Parallel Operation (Fig. 3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—
Soft Loading Extended Parallel < 250 kW (Fig. 4)	Yes	Yes	Yes	—	Yes	—	Yes	—
Soft Loading Extended Parallel >250kW (Fig.4)	Yes	Yes	Yes	—	Yes	—	Yes	Yes
Inverter Connection (Fig. 5)								
< 40 kW	Yes	Yes	Yes	—	Yes	—	—	—
40 kW – 250kW	Yes	Yes	Yes	—	Yes	—	—	—
> 250 kW	Yes	Yes	Yes	—	Yes	—	—	Yes

7. Agreements

A) Interconnection Agreement – This agreement is required for all Generation Systems that parallel with the RPU distribution system. RPU tariffs contain standard interconnection agreements. There are different interconnection agreements depending upon the size and type of Generation System. This agreement contains the terms and conditions upon which the Generation System is to be connected, constructed and maintained, when operated in parallel with RPU. Some of the issues covered in the interconnection agreement are as follows;

i) Construction Process

ii) Testing Requirements

iii) Maintenance Requirements

iv) Firm Operating Requirements such as Power Factor

v) Access requirements for RPU personnel

vi) Disconnection of the Generation System (Emergency and Non-emergency)

vii) Term of Agreement

viii) Insurance Requirements

ix) Dispute Resolution Procedures

B) Operating Agreement – For Generation Systems that normally operate in parallel with the RPU distribution system, an agreement separate from the interconnection agreement, called the "operating agreement", is usually created. This agreement is created for the benefit of both the Interconnection Customer and RPU and will be agreed to between the Parties. This agreement will be dynamic and is intended to be updated and reviewed annually. For some smaller systems, the operating agreement can simply be a letter agreement for larger and more intergraded Generation Systems the operating agreement will tend to be more involved and more formal. The operating agreement covers items that are necessary for the reliable operation of the Local EPS and the RPU distribution system. The items typically included in the operating agreement are as follows;

i) Emergency and normal contact information for both the RPU operations center and for the Interconnection Customer

ii) Procedures for periodic Generation System test runs.

iii) Procedures for maintenance on the RPU distribution system that affect the Generation System.

iv) Emergency Generation Operation Procedures

8. Testing Requirements

A) Pre-Certification of equipment

The most important part of the process to interconnect generation with a Local EPS and RPU is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence, is required by the State of Minnesota to be listed by a recognized testing and certification laboratory, for its intended purpose. Typically we see this as "UL" listed. Since Generation Systems have tended to be uniquely designed for each installation they have been designed and approved by Professional Engineers.

As the number of Generation Systems installed increase, vendors are working towards creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move towards “plug and play” installations. For this reason, this standard recognizes the efficiency of “pre-certification” of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacture, tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929, shall be acceptable for interconnection without additional protection system requirements. An “equipment package” shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not required further design review, testing or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing ad listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by RPU.
The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to the RPU distribution system. An application will still need to be submitted and an interconnection review may still need to be performed, to determine the compatibility of the Generation System with RPU.

B) Pre-Commissioning Tests

i) Non-Certified Equipment

(1) Protective Relaying and Equipment Related to Islanding

(a) Distributed generation that is not Type-Certified (type tested), shall be equipped with protective hardware and/or software designed to prevent the Generation from being connected to a de-energized RPU distribution system.

(b) The Generation may not close into a de-energized RPU distribution system and protection provided to prevent this from occurring. It is the Interconnection Customer’s responsibility to provide a final design and to install the protective measures required by RPU. RPU will review and approve the design, the types of relays specified, and the installation. Mutually agreed upon exceptions may at times be necessary and desirable. It is strongly recommended that the Interconnection Customer obtain written

approval from RPU prior to ordering protective equipment for parallel operation. The Interconnection Customer will own these protective measures installed at their facility.

(c) The Interconnection Customer shall obtain prior approval from RPU for any revisions to the specified relay calibrations.

C) Commissioning Testing

The following tests shall be completed by the Interconnection Customer. All of the required tests in each section shall be completed prior to moving on to the next section of tests. RPU has the right to witness all field testing and to review all records prior to allowing the system to be made ready for normal operation. RPU shall be notified, with sufficient lead time to allow the opportunity for RPU personnel to witness any or all of the testing.

i) Pre-testing - The following tests are required to be completed on the Generation System prior to energization by the Generator or RPU. Some of these tests may be completed in the factory if no additional wiring or connections were made to that component. These tests are marked with a "*"

(1) Grounding shall be verified to ensure that it complies with this standard, the NESC and the NEC.

(2) CT's (Current Transformers) and VT's (Voltage Transformers) used for monitoring and protection, shall be tested to ensure correct polarity, ratio and wiring.

(3) CT's shall be visually inspected to ensure that all grounding and shorting connections have been removed where required.

(4) Breaker / Switch tests – Verify that the breaker or switch cannot be operated with interlocks in place or that the breaker or switch cannot be automatically operated when in manual mode. Various Generation Systems have different interlocks, local or manual modes etc. The intent of this section is to ensure that the breaker or switches controls are operating properly.

(5) * Relay Tests – All Protective relays shall be calibrated and tested to ensure the correct operation of the protective element. Documentation of all relay calibration tests and settings shall be furnished to RPU.

(6) Trip Checks - Protective relaying shall be functionally tested to ensure the correct operation of the complete system. Functional testing requires that the complete system is operated by the injection of current and/or voltage to trigger the relay element and proving that the relay element trips the required breaker, lockout relay or provides the correct signal to the next control element. Trip circuits shall be proven through the entire scheme (including breaker trip.

For factory assembled systems, such as inverters the setting of the protective elements may occur at the factory. This section requires that the complete system including the wiring and the device being tripped or activated is proven to be in working condition through the injection of current and/or voltage.

(7) Remote Control, SCADA and Remote Monitoring tests – All remote control functions and remote monitoring points shall be verified operational. In some cases, it may not be possible to verify all of the analog values prior to energization. Where appropriate, those points may be verified during the energization process.

(8) Phase Tests – the Interconnection Customer shall work with RPU to complete the phase test to ensure proper phase rotation of the Generation and wiring.

(9) Synchronizing test – The following tests shall be done across an open switch or racked out breaker. The switch or breaker shall be in a position that it is incapable of closing between the Generation System and the RPU distribution system for this test. This test shall demonstrate that at the moment of the paralleling-device closure, the frequency, voltage and phase angle are within the required ranges, stated in IEEE 1547. This test shall also demonstrate that is any of the parameters are outside of the ranges stated; the paralleling-device shall not close. For inverter-based interconnected systems this test may not be required unless the inverter creates fundamental voltages before the paralleling device is closed.

ii) On-Line Commissioning Test – the following tests will proceed once the Generation System has completed Pre-testing and the results have been reviewed and approved by RPU. For smaller Generation Systems, RPU may have a set of standard interconnection tests that will be required. On larger and more complex Generation Systems the Interconnection Customer and RPU will get together to develop the required testing procedure. All on-line commissioning tests shall be based on written test procedures agreed to between RPU and the Interconnection Customer.

Generation System functionally shall be verified for specific interconnections as follows:

(1) Anti-Islanding Test – For Generation Systems that parallel with the utility for longer than 100msec.

(a) The Generation System shall be started and connected in parallel with the RPU distribution system source

(b) The RPU distribution system source shall be removed by opening a switch, breaker etc.

(c) The Generation System shall either separate with the local load or stop generating

(d) The device that was opened to remove the RPU distribution system source shall be closed and the Generation System shall not re-parallel with the RPU distribution system for at least 5 minutes.

iii) Final System Sign-off.

(1) To ensure the safety of the public, all interconnected customer owned generation systems which do not utilize a Type-Certified system shall be certified as ready to

operate by a Professional Electrical Engineer registered in the State of Minnesota, prior to the installation being considered ready for commercial use.

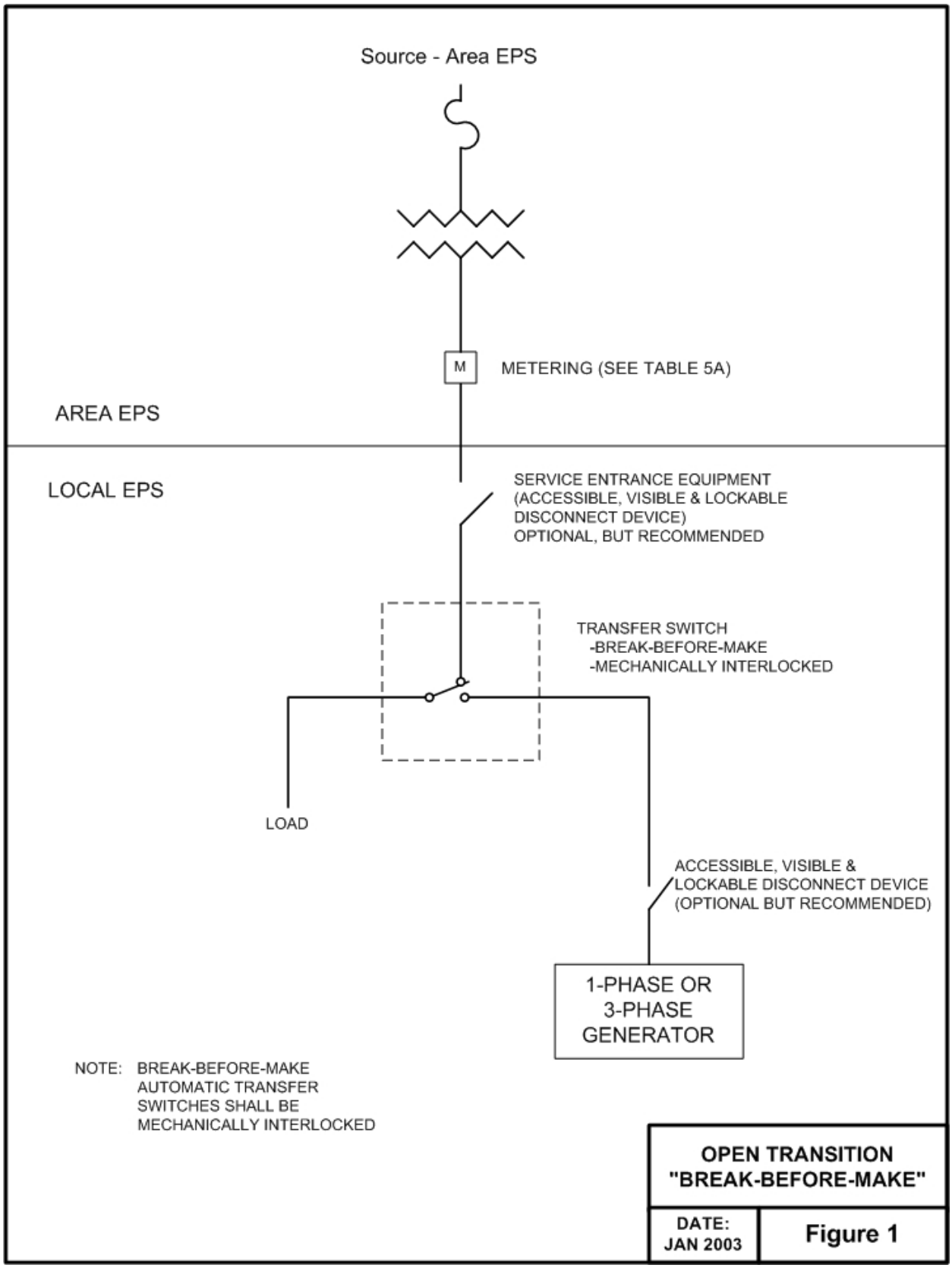
iv) Periodic Testing and Record Keeping

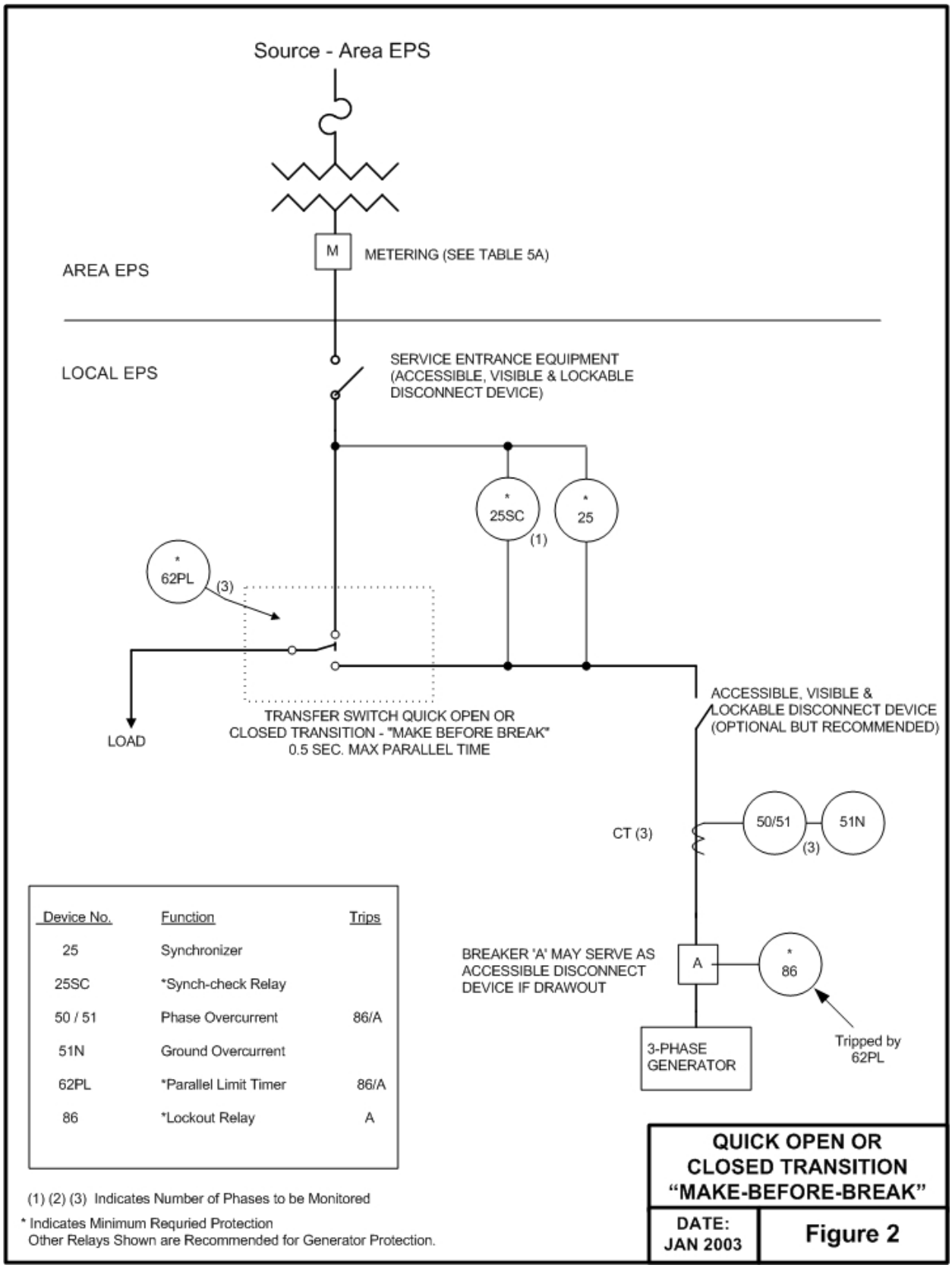
(1) Any time the interface hardware or software, including protective relaying and generation control systems are replaced and/or modified, RPU shall be notified. This notification shall, if possible, be with sufficient warning so that RPU personnel can be involved in the planning for the modification and/or witness the verification testing. Verification testing shall be completed on the replaced and/or modified equipment and systems. The involvement of RPU personnel will depend upon the complexity of the Generation System and the component being replaced and/or modified. Since the Interconnection Customer and RPU are now operating an interconnected system. It is important for each to communicate changes in operation, procedures and/or equipment to ensure the safety and reliability of the Local EPS and the RPU distribution system.

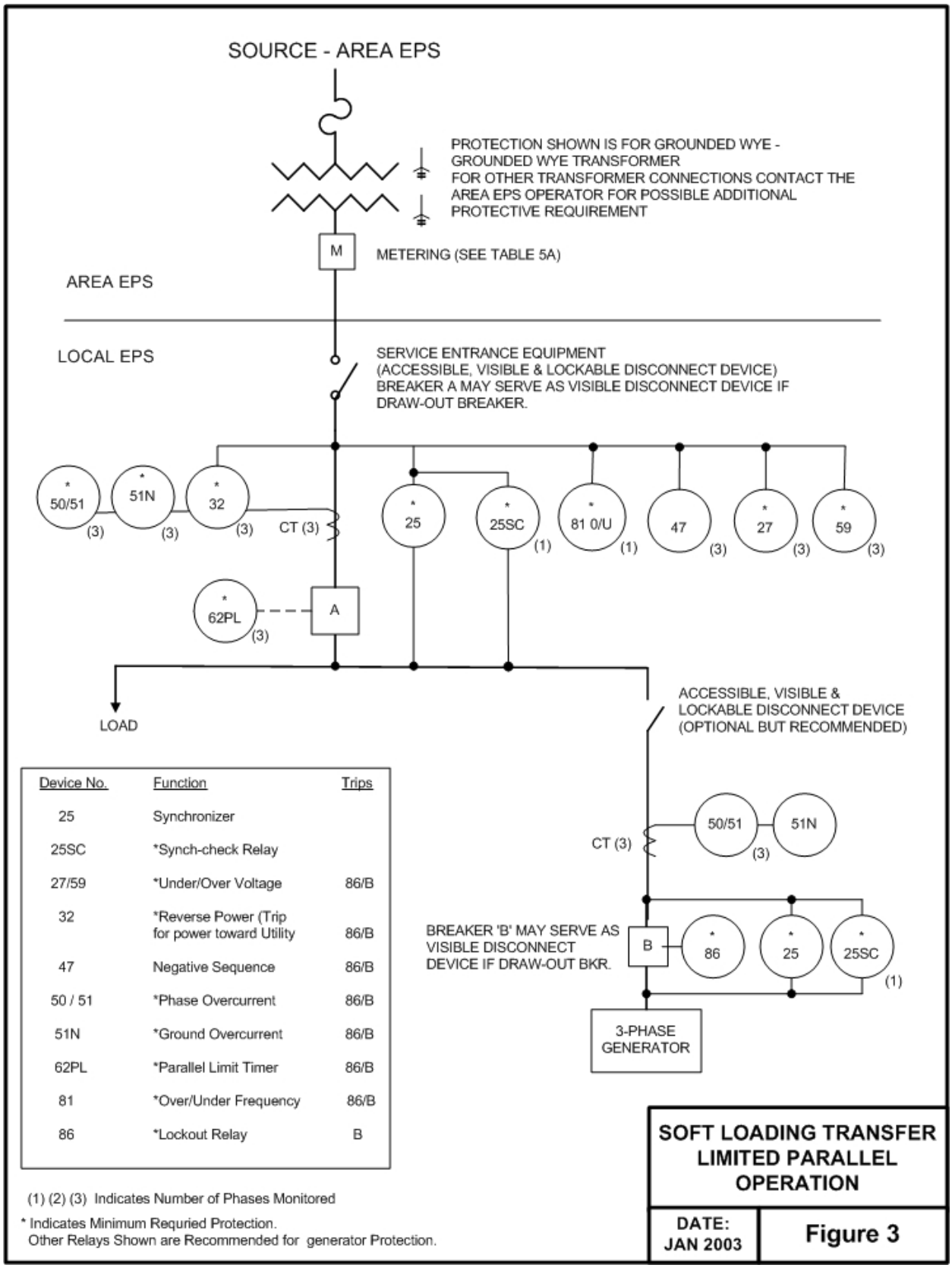
(2) All interconnection-related protection systems shall be periodically tested and maintained, by the Interconnection Customer, at intervals specified by the manufacture or system integrator. These intervals shall not exceed 5 years. Periodic test reports and a log of inspections shall be maintained, by the Interconnection Customer and made available to RPU upon request. RPU operator shall be notified prior to the period testing of the protective systems, so that RPU personnel may witness the testing if so desired.

(3) Verification of inverter connected system rated 15kVA and below may be completed as follows; The Interconnection Customer shall operate the load break disconnect switch and verify the Generator automatically shuts down and does not restart for at least 5 minutes after the switch is close

(4) Any system that depends upon a battery for trip/protection power shall be checked and logged once per month for proper voltage. Once every four years the battery(s) must be either replaced or a discharge test performed. Longer intervals are possible through the use of “station class batteries” and RPU approval.



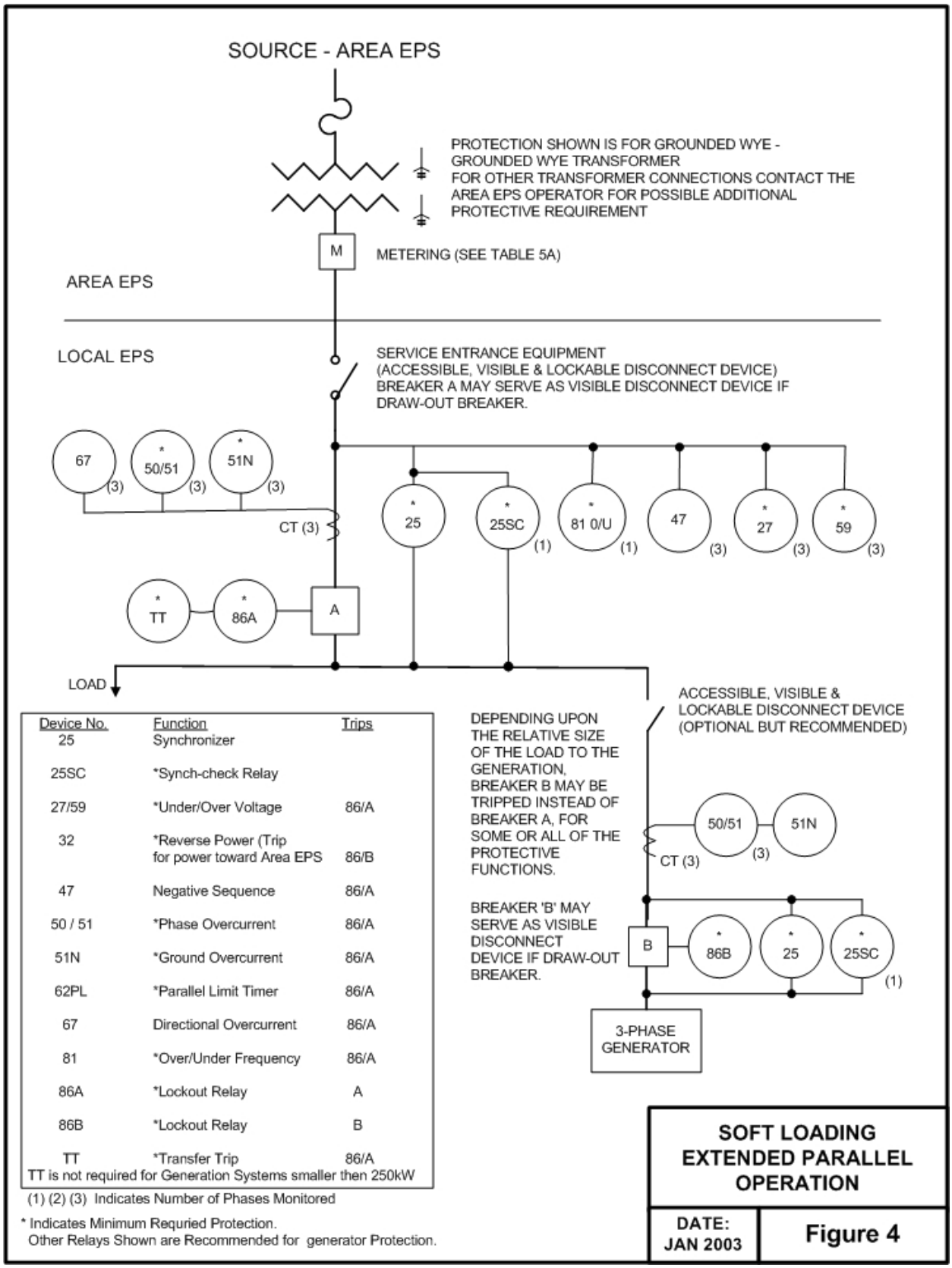




Device No.	Function	Trips
25	Synchronizer	
25SC	*Synch-check Relay	
27/59	*Under/Over Voltage	86/B
32	*Reverse Power (Trip for power toward Utility	86/B
47	Negative Sequence	86/B
50 / 51	*Phase Overcurrent	86/B
51N	*Ground Overcurrent	86/B
62PL	*Parallel Limit Timer	86/B
81	*Over/Under Frequency	86/B
86	*Lockout Relay	B

(1) (2) (3) Indicates Number of Phases Monitored

* Indicates Minimum Requried Protection.
Other Relays Shown are Recommended for generator Protection.

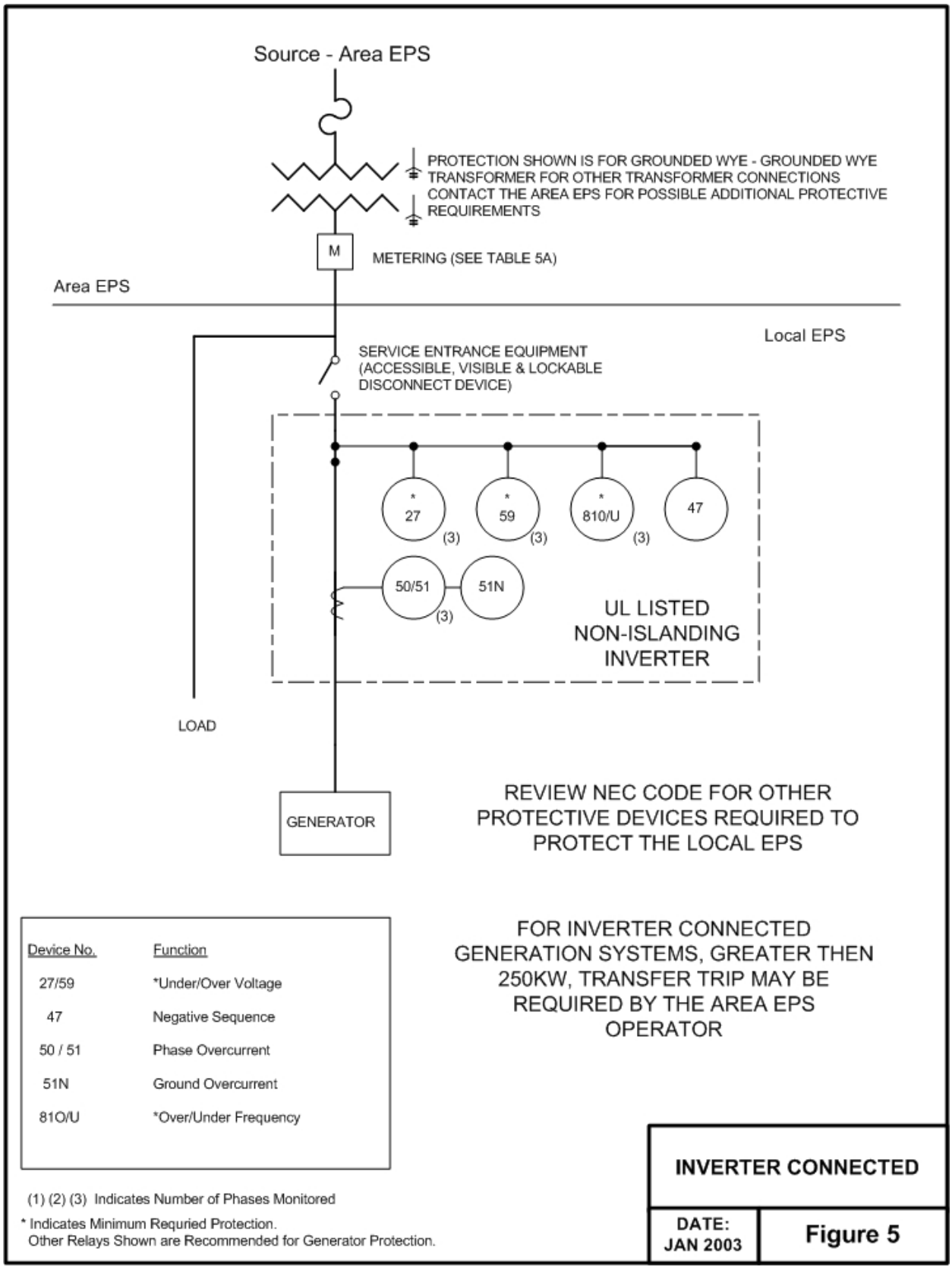


Device No.	Function	Trips
25	Synchronizer	
25SC	*Synch-check Relay	
27/59	*Under/Over Voltage	86/A
32	*Reverse Power (Trip for power toward Area EPS	86/B
47	Negative Sequence	86/A
50 / 51	*Phase Overcurrent	86/A
51N	*Ground Overcurrent	86/A
62PL	*Parallel Limit Timer	86/A
67	Directional Overcurrent	86/A
81	*Over/Under Frequency	86/A
86A	*Lockout Relay	A
86B	*Lockout Relay	B
TT	*Transfer Trip	86/A

TT is not required for Generation Systems smaller then 250kW

(1) (2) (3) Indicates Number of Phases Monitored

* Indicates Minimum Requried Protection.
Other Relays Shown are Recommended for generator Protection.



SCHEDULE 4 – NOTIFICATION PROCEDURE

All QF Systems

RPU does not envision a time when RPU shall stop purchasing energy. However, if such a time occurs, RPU shall notify the QF by mail, phone, email or other forms of electronic communication supplied by the QF to RPU.

SCHEDULE 5 – AVERAGE INCREMENTAL COST

Estimated Marginal Energy Costs ($/MWh)						
		2018	2019	2020	2021	2025
Summer	**On Peak**	**26.73**	**26.26**	**26.35**	**25.21**	**25.63**
	Off Peak	16.19	17.02	15.68	16.06	16.20
	All Hours	23.22	23.18	22.78	22.14	22.48
Winter	**On Peak**	27.31	28.00	28.20	28.66	29.20
	Off Peak	19.37	19.88	20.33	20.34	21.48
	All Hours	24.64	25.28	25.58	25.88	26.63
Annual	**On Peak**	27.02	27.13	27.27	26.93	27.42
	Off Peak	17.78	18.45	18.00	18.20	18.84
	All Hours	23.93	24.23	24.18	24.01	24.56
Annual # hours on-peak:						

Description of season and on-peak and off-peak periods	
Summer:	April through September
Winter:	October through March
On-peak period:	6 am to 10 pm Monday through Friday except holiday (New Years, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day)
Off-peak period:	All other hours

Estimated Marginal Energy Costs

The estimated system average incremental energy costs are calculated by seasonal peak and off-peak periods for each of the next five years. For each seasonal period, system incremental energy costs are averaged during system daily peak hours, system daily off-peak hours, and all hours in the season. The energy costs are increased by a factor equal to 50 percent of the line losses.

The energy needs of the RPU are served through its membership in Southern Minnesota Municipal Power Agency (SMMPA). SMMPA, in turn, is a member of the Midcontinent ISO (MISO). As a result, the municipal's incremental energy cost is equivalent to the MISO hourly Locational Marginal Price (LMP). Actual hourly LMP will vary significantly based on several parameters such as weather, energy demand, and generation availability. The table above represents a forecast of the MISO hourly LMP values averaged over each specific time period at the MISO Minnesota Hub.

Capacity Costs

SMMPA, RPU's wholesale supplier, has neither planned generating facility additions nor planned additional capacity purchases, other than from qualifying facilities, during the ensuing ten years, thus SMMPA and RPU are deemed to have no avoidable capacity costs.

RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, to approve the Distribution Generation Rules Updates and associated schedules.

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 24th day of April, 2018.

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President

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Secretary

FOR BOARD ACTION

Agenda Item # **(ID # 8844)** **Meeting Date: 4/24/2018**

SUBJECT: Involuntary Disconnection Policy

PREPARED BY: Mark Kotschevar

ITEM DESCRIPTION:

The revised Involuntary Disconnection Policy, formerly the Cold Weather Disconnect Policy, was presented to the Board for review at the February meeting and additional changes were presented at the March meeting. Revisions include the addition of provisions for the prevention of disconnects during extreme heat conditions per Minnesota Statute §216B.0975, and for active duty military personnel, per Minnesota Statue §325E.028. The policy revisions have been reviewed by the Board's Communications committee and were posted on the RPU website for public comment; no further comments or changes have been received. Therefore, staff requests approval of the revised policy.

UTILITY BOARD ACTION REQUESTED:

Approve the attached Involuntary Disconnection Policy.

ROCHESTER PUBLIC UTILITIES
BOARD POLICY STATEMENT

POLICY SUBJECT: Involuntary Disconnection

POLICY OBJECTIVE:

The Board's objective is to ensure that residential customer accounts are protected during cold weather periods extreme heat conditions and military service as prescribed in Minnesota Statutes §§ 216B.097, 216B.0975, and 325E.028.

POLICY STATEMENT:

1. COLD WEATHER RULE

Minnesota Statute § 216B.097 states that RPU must not disconnect and must reconnect the utility service of a residential customer during the period between October 15 and April 15, if the disconnection affects the primary heat source for the residential unit and all of the conditions described in the statute are met. For the purposes of this policy, "disconnection" includes a service or load limiter or any device that limits or interrupts electric service in any way. This protection does not prohibit RPU from disconnecting service, but requires several steps to be taken before disconnection.

A. **Application: notice to residential customer**

RPU will not disconnect or will reconnect the utility service of a residential customer if the disconnection affects the primary heat source for the residential unit and all of the following conditions are met:

(1) The household income of the customer is at or below 50 percent of the state median household income. RPU may verify income on forms it provides or obtain verification of income from the local energy assistance provider. A customer is deemed to meet the income requirements of this clause if the customer receives any form of public assistance, including energy assistance, that uses an income eligibility threshold set at or below 50 percent of the state median household income.

(2) A customer enters into and makes reasonably timely payments under a payment agreement that considers the financial resources of the household. "Reasonably timely payment" means payment within five working days of agreed-upon due dates.

(3) A customer receives referrals to energy assistance, weatherization, conservation, or other programs likely to reduce the customer's energy bills.

RPU will, between August 15 and October 15 each year, notify all residential customers of the provisions of this policy and Minnesota Statute § 216B.097.

B. **Notice to residential customer facing involuntary disconnection**

Before disconnecting service to a residential customer during the period between October 15 and April 15, RPU will provide the following information to a customer:

(1) a notice of proposed disconnection;

(2) a statement explaining the customer's rights and responsibilities;

(3) a list of local energy assistance providers;

(4) a form on which to declare inability to pay; and

(5) a statement explaining available time payment plans and other opportunities to secure continued utility service.

C. **Restrictions, if involuntary disconnection is necessary**

If a residential customer must be involuntarily disconnected between October 15 and April 15 for failure to comply with section 1A, the disconnection will not occur:

(1) on a Friday, unless the customer declines to enter into a payment agreement offered that day in person or via personal contact by telephone by an RPU representative;

(2) on a weekend, holiday, or the day before a holiday;

(3) when RPU offices are closed; or

(4) after the close of business on a day when disconnection is permitted, unless a field representative of RPU who is authorized to enter into a payment agreement, accept payment, and continue service, offers a payment agreement to the customer.

Further, the disconnection will not occur until at least 20 days after the notice required in section 1B has been mailed to the customer or 15 days after the notice has been personally delivered to the customer.

If a customer does not respond to a disconnection notice, the customer will not be disconnected until RPU investigates whether the residential unit is actually occupied. If the unit is found to be occupied, RPU will immediately inform the occupant of the provisions of this section and allow five working days to comply with this policy or apply for service in the event of a new occupant. If the unit is unoccupied, RPU will give seven days' written notice of the proposed disconnection to the local energy assistance provider before making a disconnection, and RPU will also notify the City of Rochester Building Safety

Department of an impending disconnection.

If, prior to disconnection, a customer appeals a notice of involuntary disconnection, as provided by RPU's established appeal procedure, RPU will not disconnect until the appeal is resolved.

2. DISCONNECTION DURING EXTREME HEAT CONDITIONS

Minnesota Statute § 216B.0975 states that RPU may not involuntary disconnect a residential service when an excessive heat watch, heat advisory, or excessive heat warning has been issued by the National Weather Service.

3. UTILITY PAYMENT ARRANGEMENTS FOR MILITARY SERVICE PERSONNEL

Minnesota Statute § 325E.028 states that RPU must not disconnect the utility service of a residential customer if a member of the household has been issued orders into active duty, for deployment, or for a permanent change in duty station during the period of active duty, deployment or change in duty station if such a residential customer:

A. Has a household income below the state median household income or is receiving energy assistance and enters into an agreement with RPU under which the residential customer pays ten percent of the customer's gross monthly income toward the customer's bill and the residential customer remains reasonably current with those payments; or

B. Has a household income above the state median household income and enters into an agreement with RPU establishing a reasonable payment schedule that considers the financial resources of the household and the residential customer remains reasonably current with payments under the payment schedule.

C. For purposes of this policy, "household income" means household income measured after the date of the orders specified in section 3.

Annual notice to all customers; inability to pay forms

RPU must notify all residential customers annually of the provisions of this section.

RPU must provide a form to a residential customer to request the protections of this section upon the residential customer's request.

Application to service limiters

For the purposes of this section "disconnection" includes a service or load limiter or any device that limits or interrupts electric service in any way.

Income verification

Verification of income may be conducted by the local energy assistance provider or RPU unless the customer is automatically eligible for protection against disconnection as a recipient of any form of public assistance, including energy assistance that uses income eligibility in an amount at or below the income eligibility in section 3A.

Appeal process
RPU shall provide the residential customer with a commission-approved written notice of the right to appeal to the commission or other appropriate governing body when RPU and residential customer are unable to agree on the establishment, reasonableness, or modification of a payment schedule, provided for by this section. Any appeal must be made within seven working days after the residential customer's receipt of personally served notice, or within ten working days after RPU has deposited first class mail notice in the United States mail.

RPU shall not disconnect service while a payment schedule is pending appeal, or until any appeal involving payment schedules has been determined by the commission.

Enforcement
This section may be enforced pursuant to chapter 216B.

Rochester Public Utilities will provide notification to the City of involuntary disconnection per Minnesota Statute § 216B.0976.

RELEVENT LEGAL AUTHORITY:
Minnesota Statutes §§ 216B.097, 216B.0975 and 325E.028

Effective Date of Policy:	September 10, 1991
Date of Policy Revision:	April 24, 2018
Policy Approval:	April 24, 2018

_____
Board President

_____
Date

RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, to approve the attached Involuntary Disconnection policy.

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 24th day of April, 2018.

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President

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Secretary

FOR BOARD ACTION

Agenda Item # **(ID # 8798)** **Meeting Date: 4/24/2018**

SUBJECT: Vertical Rise Truck Lift

PREPARED BY: Steve Monson

ITEM DESCRIPTION:

Sealed bids were received on April 10, 2018 for the purchase and installation of a new vertical rise truck lift to be used in the fleet shop. This was budgeted at $158,000 for this year and will result in creating a safer work environment for the mechanics that have to work on the big trucks. Even though this solicitation was advertised, only one bid was received by High Forest Bobcat from Stewartville in the amount of $157,466.68. They submitted a responsive and responsible bid and have performed well with other work in the past.

This bid is a firm fixed price and the work is expected to be completed no later than June 30, 2018.

UTILITY BOARD ACTION REQUESTED:

Approve a resolution to issue a purchase order to High Forest Bobcat Inc. in the amount of $157,466.68.

RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, to approve a purchase order for the purchase and installation of a vertical rise truck lift from High Forest Bobcat Inc. in the amount of ONE HUNDRED FIFTY SEVEN THOUSAND, FOUR HUNDRED SIXTY-SIX AND 68/100 DOLLARS ($157,466.68).

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 24th day of April, 2018.

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President

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Secretary

FOR BOARD ACTION

Agenda Item # **(ID # 8797)** **Meeting Date: 4/24/2018**

SUBJECT: Rough Terrain Telescoping Forklift

PREPARED BY: Mona Hoeft

ITEM DESCRIPTION:

Sealed bids were received on April 16th for the replacement of one rough terrain telescoping forklift used for warehouse operations. The results of the bids are as follows:

Vendor	Price	Make	Trade-In	Net Price
Hayden-Murphy	$176,625.00	Manitou MHT790	$25,000	$151,625.00
RDO Equipment	$179,250.00	Manitou MHT790	$16,000	$163,250.00
Forklifts of MN	$199,790.96	JLG 1732	$16,000	$183,790.96

Forklifts of Minnesota, Inc. provided a bid that did not meet the basic specification requirement that called for a forklift with a 17,000 lb lifting capacity and RDO Equipment Co. Inc. failed to properly complete the bid requirements and for that reason the board is asked to reject these two bids as non-responsive and accept the bid from Hayden-Murphy Equipment Co. in the amount of $151,625.

This replacement was included in the 2018 Capital Equipment budget.

UTILITY BOARD ACTION REQUESTED:

Approve a resolution to reject Forklifts of Minnesota, Inc. and RDO Equipment Co. Inc.'s bids as non-responsive and accept the bid from Hayden-Murphy Equipment Co. in the amount of $151,625.

RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, to reject the bids from Forklifts of Minnesota, Inc. and RDO Equipment Co. Inc. and accept the bid from Hayden-Murphy Equipment Co. for the purchase of a rough terrain telescoping forklift in the amount of ONE HUNDRED FIFTY ONE THOUSAND, SIX HUNDRED TWENTY-FIVE AND 00/100 DOLLARS ($151,625.00).

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 24th day of April, 2018.

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President

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Secretary

FOR BOARD ACTION

Agenda Item # **(ID # 8825)** **Meeting Date: 4/24/2018**

SUBJECT: CSC Building Expansion and Renovation Project - Update

PREPARED BY: Patricia Bremer

ITEM DESCRIPTION:

Construction efforts on the Customer Service Center Building Expansion and Renovation Project began in December 2017, and are on track for completion in December 2018. Staff intend to provide an update to the Board on project status and next steps.

UTILITY BOARD ACTION REQUESTED:

None. Informational only.

FOR BOARD ACTION

Agenda Item # **(ID # 8826)** **Meeting Date: 4/24/2018**

SUBJECT: Electric Engineering & Operations Report for 2017

PREPARED BY: Randy Anderton

ITEM DESCRIPTION:

The Electric E&O Report for 2017 has been provided to the Board under separate cover. The report is prepared annually to document the major accomplishments and performance statistics that reflect the work of the electric department for the year. Staff will make a brief presentation on the report and respond to any questions from the Board.

UTILITY BOARD ACTION REQUESTED:

Not Applicable

FOR BOARD ACTION

Agenda Item # **(ID # 8843)** **Meeting Date: 4/24/2018**

SUBJECT: RPU Index of Board Policies

PREPARED BY: Christina Bailey

ITEM DESCRIPTION:

RPU Index of Board Policies

UTILITY BOARD ACTION REQUESTED:

Informational only

ROCHESTER PUBLIC UTILITIES		
INDEX OF BOARD POLICIES		
	REVISION DATE	RESPONSIBLE BOARD COMMITTEE
BOARD		
1. Mission Statement	6/26/2012	Policy
2. Responsibilities and Functions	3/27/2012	Policy
3. Relationship with the Common Council	2/28/2012	Policy
4. Board Organization	3/27/2018	Policy
5. Board Procedures	3/27/2012	Policy
6. Delegation of Authority/Relationship with Management	2/28/2012	Policy
7. Member Attendance at Conferences and Meetings	6/10/1986	Policy
8. Board Member Expenses	6/10/1986	Combine with #7
9. Conflict of Interest	11/26/1985	Delete
10. Alcohol and Illegal Drugs	7/28/1988	Delete
11. Worker Safety	3/27/2012	Policy
CUSTOMER		
12. Customer Relations	5/8/1984	Ops & Admin
13. Customer and Public Information	4/10/1984	Communications
14. Application for Service	7/1/2016	Ops & Admin
15. Electric Utility Line Extension Policy	3/28/2017	Finance
16. Billing, Credit and Collections Policy	7/25/2017	Finance
17. Electric Service Availability	4/28/1998	Ops & Admin
18. Electric Metering	4/10/1984	Ops & Admin
19. Electric & Water Bill Adjustment	3/10/1994	Finance
20. Rates	7/25/2017	Finance
21. RPU Cold Weather Disconnect Policy	9/28/2010	Communications
ADMINISTRATIVE		
22. Acquisition and Disposal of Interest in Real Property	12/19/2017	Ops & Admin
23. Electric Utility Cash Reserve Policy	1/13/2017	Finance
24. Water Utility Cash Reserve Policy	1/13/2017	Finance
25. Charitable Contributions	11/26/1985	Communications
26. Utility Compliance	10/24/2017	Communications
27. Contribution in Lieu of Taxes	6/29/1999	Finance
28. Debt Issuance (PENDING)	PENDING	Finance
29. Joint-Use of Fixed Facilities and Land Rights	10/8/1996	Ops & Admin
30. Customer Data Policy	10/9/2014	Communications
31. Life Support	10/9/2014	Communications
32. Undergrounding Policy	PENDING	Ops & Admin
Red - Currently being worked on		
Yellow - Will be scheduled for revision		