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October 26, 2019

U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Subject: Failure of investor owned electric utilities to disclose cybersecurity risk.

Dear Commissioners:

I am a citizen who conducts public interest research on the security of the electric grid. I have conducted several recent studies which raise significant regulatory red flags, not the least of which is a massive cybersecurity risk coverup in the electric utility industry. I believe that cybersecurity risk is not being disclosed to shareholders (as well as ratepayers, Congress and state regulators). The purveyors of this coverup are the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC) aided and abetted by the entire electric utility industry, which consists of many publicly traded companies.

Exhibit A is a list of most of the "Investor Owned Utilities" from the industry group Edison Electric Institute's member list.¹ Exhibit B is a list of the NERC Regulated Entities downloaded on October 26, 2019 from NERC's website.² This list includes both investor owned and publicly owned utilities.

As detailed in the attached report of my research (Exhibit C), which I filed with FERC on October 25, 2019, I have been conducting an investigation since March of 2018 into NERC's practice of withholding the identities of Critical Infrastructure Protection (CIP) standards violators from the public. CIP standards include the standards for cybersecurity as well as physical security of critical facilities. This investigation has revealed that from July of 2010 through September of 2019 there had been 256 FERC dockets involving almost 1,500 "Unidentified Registered Entities."³ In each of these instances, the identity of the regulatory violator was withheld from

¹ See: <https://www.eei.org/about/members/uselectriccompanies/Pages/default.aspx> (accessed October 26, 2019).

² See: <https://www.nerc.com/pa/comp/Pages/Registration.aspx> (accessed October 26, 2019).

³ Exhibit D is a listing of these 256 FERC Dockets. Note: "Unidentified Registered Entity" or "URE" is the industry euphemism for CIP standard violators whose names are being withheld by NERC. As of 2019 NERC began hiding the number of UREs covered in spreadsheet NOPs, so we can no longer accurately determine the number of URE's involved and are making low-end estimates of the number of entities.

the public.⁴ As part of the investigations, I have filed six Freedom of Information Act Requests, three of which are still pending, covering 253 FERC dockets.⁵ So far, my FOIA requests have been successful in outing less than 10 of the 1,500 company names so far - including Duke Energy Corp (NYSE: DUK) and Pacific Gas and Electric Corp. (NYSE: PCG).

The companies that are regulated by the Securities Exchange Commission have reporting requirements for material events. Since the names of CIP violators are being covered up, investors are unaware of the cybersecurity risks that these publicly traded companies face—and whether the “C Suite” is taking appropriate actions to mitigate (*or at least disclose*) investor risk.

Another aspect being covered up is who is paying for CIP fines and mitigation – the shareholders or the ratepayers? And, most importantly, *who decides who pays?*

The last question is easy: Absent transparency, the regulatory violator decides who pays. The public (“ratepayers”), investors (“shareholders”), the state Public Utility Commissions (the ones who should be making these decisions) and Congress (the oversight) presently has no visibility over what the cyber risk is and who is paying for it.

For example: Last year, PG&E Corp was fined 2.7 million dollars for a cyber breach (which was exposed by one of my Freedom of Information Act requests).⁶ PG&E presumably also had to spend an unknown amount (but likely a substantial amount) of money on mitigation. Somebody had to pay for all of this. Because I could find no disclosure of the event or its costs in PG&E’s filings with the Securities and Exchange Commission, it is impossible for the public to know whether the shareholders or the ratepayers ate these costs—I am sure both groups would like to know.

Does it make a difference in who should pay if a company is a repeat CIP violator? Does it make a difference in who should pay if the company is negligent? I’m sure the shareholders, ratepayers and Public Utility Commissions would think these situations should make a difference but the coverup has eliminated these stakeholders from view.

The *last* one who should be deciding who pays *is the regulatory violator*. This decision should be made by the appropriate regulator (the PUC) with full transparency to the two possible victims: the ratepayers and the shareholders.

⁴ A detailed report of the investigation is available here: <https://michaelmabee.info/nerc-coverup-investigation-report/> (accessed October 25, 2019). Also see: <https://michaelmabee.info/grid-coverup-continues/> (accessed October 25, 2019).

⁵ Details, updates and copies of my FOIA requests and responses are available here: <https://michaelmabee.info/cip-violation-database/> (accessed October 25, 2019).

⁶ See report: <https://michaelmabee.info/pge-endangered-the-grid/> (accessed October 22, 2019).

Whereas my FOIAs will take years (and likely litigation) to resolve, I believe the Commission can subpoena the FERC Notices of Penalty in Exhibit D and determine whether the publicly traded utilities have made the appropriate §15(d) disclosures to investors.

If the cases of PG&E Corp.⁷ and Duke Energy Corp.⁸ are any indication, I was not able to find any disclosures for the massive cybersecurity fines levied against them by regulators – leaving investors, ratepayers, state regulators and Congress in the dark.

Respectfully submitted,



Michael Mabee

⁷ See Report: “PG&E endangered the grid – and tried to cover it up.” <https://michaelmabee.info/pge-endangered-the-grid/> (accessed October 26, 2019).

⁸ See Report: “Duke Redux – A Repeat Cybersecurity Violator Exposed!” <https://michaelmabee.info/duke-redux-a-repeat-cybersecurity-violator-exposed/> (accessed October 26, 2019).



Edison Electric
INSTITUTE

Power by AssociationSM

Members List

U.S. Investor-Owned Electric Companies
International Members
Associate Members

EEl The Edison Electric Institute, is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for about 220 million Americans, and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States. In addition to our U.S. members, EEl has more than 65 international electric companies with operations in more than 90 countries, as International Members, and hundreds of industry suppliers and related organizations as Associate Members. Organized in 1933, EEl provides public policy leadership, strategic business intelligence, and essential conferences and forums.

U.S. Energy Companies

AES Corporation

- Dayton Power & Light Company
- Indianapolis Power & Light Company

ALLETE

- Minnesota Power
- Superior Water, Light and Power Company

Alliant Energy

Ameren Corporation

- Ameren Illinois
- Ameren Missouri

American Electric Power

- AEP Ohio
- AEP Texas
- Appalachian Power Company
- Indiana Michigan Company
- Kentucky Power Company
- Public Service Company of Oklahoma
- Southwestern Electric Power Company

American Transmission Company

AVANGRID

- Central Maine Power
- New York State Electric & Gas
- Rochester Gas & Electric
- The United Illuminating Company

Avista Corporation

- Avista Utilities
- Alaska Electric Light and Power Company

Berkshire Hathaway Energy

- MidAmerican Energy Company
- NV Energy
- PacifiCorp

- Pacific Power

- Rocky Mountain Power

Black Hills Corporation

- Black Hills Energy

CenterPoint Energy

Central Hudson Gas & Electric Corp.

Cleco Corporate Holdings

- Cleco Power

CMS Energy

- Consumers Energy

Consolidated Edison

- Consolidated Edison Company of New York
- Orange and Rockland Utilities
- Rockland Electric Company

Cross Texas Transmission

Dominion Energy

- Dominion Energy Virginia
- Dominion Energy North Carolina
- South Carolina Electric & Gas

DTE Energy

Duke Energy

Duquesne Light Company

Edison International

- Southern California Edison

El Paso Electric

Entergy Corporation

- Entergy Arkansas
- Entergy Louisiana
- Entergy Mississippi
- Entergy New Orleans
- Entergy Texas

Eversource Energy

- Kansas City Power & Light Company
- Westar Energy

Eversource Energy

Exelon Corporation

- Atlantic City Electric
- Baltimore Gas and Electric Company
- ComEd
- Delmarva Power
- PECO
- Pepco

FirstEnergy Corp.

- The Illuminating Company
- Jersey Central Power & Light
- Met-Ed
- Mon Power
- Ohio Edison
- Penelec
- Penn Power
- Potomac Edison
- Toledo Edison
- West Penn Power

Florida Public Utilities

Green Mountain Power

Hawaiian Electric Industries

- Hawaiian Electric Company
- Hawaii Electric Light Company
- Maui Electric Company

IDACORP

- Idaho Power

ITC Holdings Corp.

- ITC Great Plains
- ITC Michigan
- ITC Midwest

Liberty Utilities

- Empire District

MDU Resources Group

- Montana-Dakota Utilities Company

MGE Energy

- Madison Gas and Electric Company

Mt. Carmel Public Utility Company

National Grid

NextEra Energy

- Florida Power & Light Company
- Gulf Power

NiSource

- Northern Indiana Public Service Company

NorthWestern Energy

OGE Energy Corporation

- Oklahoma Gas & Electric Company

Ohio Valley Electric Corporation

Oncor

Otter Tail Corporation

- Otter Tail Power Company

PG&E Corporation

- Pacific Gas & Electric Company

Pinnacle West Capital Corporation

- Arizona Public Service Company

PNM Resources

- PNM

- TNMP

Portland General Electric

PPL Corporation

- PPL Electric Utilities
- LG&E and KU Energy

Public Service Enterprise Group

- Public Service Electric & Gas Company
- PSEG Long Island

Puget Sound Energy

San Diego Gas & Electric Company

Sharyland Utilities

Southern Company

- Alabama Power Company
- Georgia Power Company
- Mississippi Power Company

Tampa Electric an Emera Company

Tennessee Valley Authority – EEl Strategic Partner

UGI Corporation

- UGI Utilities

Unitil Corporation

UNS Energy Corporation

- Tucson Electric Power

- UniSource Energy Services

Upper Peninsula Power Company

Vermont Electric Power Company

WEC Energy Group

- We Energies
- Wisconsin Public Service
- Upper Michigan Energy Resources

Xcel Energy

International Members

AES Corporation
Alectra - Canada
Altalink - Canada
APR Energy - United States
ATCO Electric - Canada
Bahamas Power and Light - Bahamas
Barbados Light & Power - Barbados
Belize Electricity - Belize
Bermuda Electric Light (BELCO) - Bermuda
Brookfield Renewables - Canada
Capital Power Corp. - Canada
CEMIG - Brazil
CESC Ltd. - India
China Southern Power Grid Co. - China
Chubu Electric Power - Japan
Comisión Federal de Electricidad (CFE) - Mexico
Compagnie Ivoirienne d'Electricité (CIE) - Ivory Coast
EDF - France
EDP - Portugal
EGE Haina - Dominican Republic
Emera, Inc. - Canada
 Barbados Light & Power - Barbados
 Nova Scotia Power Inc. - Canada
 Dominica Electricity Services Ltd. - Island of Dominica
 St. Lucia Electricity Services (LUCELEC) - West Indies
Endeavour Energy - Australia
Energy Queensland - Australia
ENMAX - Canada
Entegrus Powerlines - Canada
ESB - Ireland
Fortis, Inc. - Canada
 Caribbean Utilities - Cayman Islands
 Eastern Canada - Canada
 FortisAlberta - Canada
 FortisBC Electric - Canada
 Maritime Electric - Canada
 Newfoundland Power - Canada
Gulf Cooperation Council Interconnection Authority (GCCIA) - Saudi Arabia
Hydro One - Canada
Hydro Ottawa - Canada
Hydro-Québec - Canada
Iberdrola - Spain
Irbid District Electricity (IDECO) - Jordan
J-Power - Japan
Jemena - Australia
Kansai Electric Power - Japan
Korea Electric Power (KEPCO) - Korea
Manitoba Hydro - Canada
National Grid - United Kingdom
Ontario Power Generation (OPG) - Canada
Orion New Zealand Ltd. - New Zealand
Power Assets Holdings - Hong Kong
Powerco Ltd. - New Zealand
SA Power Networks - Australia
SaskPower - Canada
St. Lucia Electricity Services (LUCELEC) - West Indies

St. Vincent Electricity Services (VINLEC) - West Indies
State Grid Corporation of China (SGCC) - China
TasNetworks - Australia
Tohoku Electric Power - Japan
Tokyo Electric Power (TEPCO) - Japan
Toronto Hydro - Canada
TransAlta - Canada
Transpower New Zealand Ltd. - New Zealand
UK Power Networks - United Kingdom
Unison Networks Ltd. - New Zealand
Vector Ltd. - New Zealand
Wellington Electricity - New Zealand

Associates

Power-Plus Members

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Oracle Utilities
PowerPlan Inc.
Quanta Services

Power Members

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Deloitte
EY
Google
Mitsubishi Electric Power Products, Inc.
Pike Electric
Troutman Sanders LLP
Uptake
Utilities International

Associate Members

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Advanced Microgrid Solutions
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Allan Briteway Electrical Utility Contractors, Inc.
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Altec Inc.
American Water
American Wholesale Lighting
American Wind Energy Association
Ampirical
Anixter Inc.
Aon Global Power
APTIM
ARCOS LLC
Ardmore Roderick
Asplundh Brush Control Co
Atwell, LLC
AutoGrid Systems
Babcock & Wilcox Company, The
Bain & Company, Inc
Baker Botts L.L.P.
BakerHostetler

Balch & Bingham LLP
Bidgely
Bosch Security and Safety Systems
Boston Consulting Group, The
Bracewell LLP
Bright Investments, LLC
Burns & McDonnell Engineering Co. Inc.
Carmen L Gentile, PLLC
Caterpillar Inc.
CBRE Clarion Securities
Chapman and Cutler LLP
Charles River Associates
Choate, Hall & Stewart LLP
Citi
Commonwealth Associates, Inc.
Concentric Energy Advisors, Inc.
Contour Global Management INC.
Corpfinance International Limited
Crowell & Moring LLP
CS Week
Cupertino Electric, Inc.
CyberCon
D&D Power Inc
Danella Companies, Inc
David Evans and Associates
Davis Wright Tremaine LLP
Day Pitney LLP
Disaster Resource Group
Distributed Energy Financial Group
DNV GL Energy Services USA
Dorsey & Whitney LLP
E Source
Eaton Corporation
e-Hazard.com
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Electrical Consultants, Inc.
EN Engineering, LLC
Enchanted Rock LLC
Energy Management Collaborative (EMC)
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Enovation Partners, LLC
Environmental Consultants, Inc.
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EQ by Equiniti
ERM
ESTA International, LLC
Evercore
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Faegre Baker Daniels, LLP
FDH Infrastructure Services, LLC
Ferreira Power West
First Solar, Inc.
Flagger Force Traffic Control Services
Fortress Information Security
FTI Consulting, Inc.
Geometric Strategies
Gibson Dunn & Crutcher
HDR, Inc.
Heidrick & Struggles
Hemma Lighting Solutions
Henkels & McCoy Group
Hogan Lovells US LLP
Holland & Knight LLP

Associate Members (cont'd)

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ICF
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IMCORP
Infratech Corporation
Innogy Consulting Americas
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ISC2, Inc.
ITRON, Inc.
Japan Electric Power Information Center, USA
Jenner & Block LLP
Jones Day
K&L Gates LLP
Kiewit Corporation
Kinetics Consulting LLC
KPMG LLP
Landis+Gyr Inc.
Latham & Watkins
Leidos
Lignite Energy Council
Lindsey Manufacturing Co.
Lockheed Martin Corporation
Loeb & Loeb LLP
Logisticus Group
Lucasys
M&S Engineering, LLC
MaintenX International
Marison Energy Systems
maslansky + partners
MasTec Transmission - Substation Group
McCarter & English, LLP
McGuireWoods LLP
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Michael Best & Friedrich LLP
MICHELS Corporation
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Midwest Energy Emissions Corp
Milbank, Tweed, Hadley & McCloy LLP
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Milwaukee Tool
Mitsubishi Hitachi Power Systems Americas, Inc.
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Moran Environmental Recovery, LLC
Morgan, Lewis & Bockius LLP
Mortenson Construction
MOSAIC
Motive Power Inc.
Munger, Tolles & Olson LLP
MYR Group Inc
Novar
Novinium
Nuclear Electric Insurance Limited
Oliver Wyman
OMICRON electronics Corp. USA
Orbital Engineering
Osborn Maledon P.A.
Osmose Utilities Services, Inc.

Pace Global
Parker Poe Adams & Bernstein, LLP
Peak Load Management Alliance
Pegasus Global Holdings, Inc.
Perkins Coie LLP
Pillsbury Winthrop Shaw Pittman LLP
PLH Group, Inc.
POWER Engineers, Inc.
PowerAdvocate, Inc.
PowerGrid Services, Collective Storm Response
Preng & Associates
PricewaterhouseCoopers LLP
Quarles & Brady LLP
Recurrent Energy
Reed Smith LLP
Regulated Capital Consultants
RHR International LLP
S&C Electric Company
Sagewell, Inc.
Sargent & Lundy, LLC
Saulsbury Industries
Schiff Hardin LLP
Schneider Electric
Schweitzer Engineering Laboratories, Inc. (SEL)
ScottMadden, Inc.
Sensus
Sharper Shape Inc
Shelton Group
Sidley Austin LLP
Siemens Energy, Inc.
Skadden, Arps, Slate, Meagher & Flom LLP
Smart Electric Power Alliance
SoftSmiths, Inc
SPE Utility Contractors
Spencer Stuart
Stanley Consultants, Inc.
Stantec Consulting Services, Inc.
Stem, Inc.
Steptoe & Johnson, LLP
Sterling Site Access Solutions, LLC
Stikeman Elliott LLP
Stinson Leonard Street LLP
Stoll Keenon Ogden PLLC
Storm Services, LLC
Taft Stettinius & Hollister LLP
Technical Consumer Products
Tenaska Marketing Ventures
Terex Utilities
Terracon
The Desoto Group
TPC Training
Transventure Energy
Trilliant Networks Inc.
Ulteig
United States Energy Association
Uplight
URBINT
USIC
Utegration
UtiliCon Solutions, Ltd.
Utilegent LLC
Van Ness Feldman, LLP

Vestas - American Wind Technology
Veteran Power, Inc.
Viking Mat Company
Vinson & Elkins LLP
Virtuoso Sourcing Group, LLC
Volkert, Inc.
Wartsila North America, Inc.
Waste Management, Inc.
Water Integrated Treatment Systems, LLC
West Monroe Partners
White & Case LLP
Wilson Construction Co
Winston & Strawn LLP
Witt OBriens LLC
Wood
Wright & Talisman, P.C.



**Edison Electric
INSTITUTE**

September 2019

NCR ID#	Entity Name	Regional Compliance Enforcement Authority	Jurisdiction
NCR11516	ACE O&M, LLC	MRO	United States
NCR11645	AE Power Services LLC	MRO	United States
NCR01056	AEP as Agent for AEP OK Transco., PSCO, and SWEPCO	MRO	United States
NCR01055	AES Shady Point, LLC	MRO	United States
NCR00959	Alexandria Light & Power	MRO	United States
NCR11785	Algonquin Power Co.	MRO	United States
NCR00961	Alliant Energy - East	MRO	United States
NCR00962	Alliant Energy - West	MRO	United States
NCR00685	American Transmission Co. LLC	MRO	United States
NCR01060	Arkansas Electric Cooperative Corporation	MRO	United States
NCR10002	Atlantic Municipal Utilities (Board Of Waterworks & Electric Power Plant Trustees)	MRO	United States
NCR10259	Avangrid Renewables	MRO	United States
NCR11548	Balko Wind, LLC	MRO	United States
NCR00102	Basin Electric Power Cooperative	MRO	United States
NCR05030	Black Hills Corporation	MRO	United States
NCR11886	Blue Cloud Wind Energy, LLC	MRO	United States
NCR01061	Board Of Public Utilities (Kansas City KS)	MRO	United States
NCR10319	Board Of Public Utilities, City Of McPherson, Kansas	MRO	United States
NCR01062	Borger Energy Associates, LP	MRO	United States
NCR11563	Buckeye Wind Energy, LLC	MRO	United States
NCR11354	Canadian Hills Wind, LLC	MRO	United States
NCR05059	Caprock Wind LLC	MRO	United States
NCR01067	Carthage Water & Electric Plant	MRO	United States
NCR00969	Cedar Falls Utilities	MRO	United States
NCR10104	Cedarburg Light & Water Utility	MRO	United States
NCR00970	Central Iowa Power Cooperative	MRO	United States
NCR11163	Central Nebraska Public Power and Irrigation District, The	MRO	United States
NCR11734	Central Power Electric Cooperative, Inc.	MRO	United States
NCR06043	Central Valley Electric Cooperative, Inc.	MRO	United States
NCR10316	CHI Power, Inc.	MRO	United States
NCR11240	Cimarron Windpower II, LLC	MRO	United States
NCR00972	City Of Ames Electric Services	MRO	United States
NCR00982	City of Escanaba	MRO	United States
NCR00974	City Of Grand Island, NE	MRO	United States
NCR10227	City Of Ottawa	MRO	United States
NCR11771	City of Saskatoon	MRO	Saskatchewan
NCR01081	City Utilities Of Springfield, MO	MRO	United States
NCR00769	Clearway Energy Operating, LLC	MRO	United States
NCR11829	Clearway Renew LLC	MRO	United States
NCR11926	Clearway Renewable Operation & Maintenance LLC	MRO	United States

NCR Matrix (with Dates)

NCR11151	Coffeyville Municipal Light & Power	MRO	United States
NCR11605	Consolidated Edison Development, Inc.	MRO	United States
NCR11773	Consolidated Water Power Co	MRO	United States
NCR00977	Corn Belt Power Cooperative	MRO	United States
NCR11810	CP Bloom Wind, LLC	MRO	United States
NCR11081	CPV Keenan II Renewable Energy Company, LLC	MRO	United States
NCR00979	Dairyland Power Cooperative	MRO	United States
NCR11179	Dempsey Ridge Wind Farm, LLC	MRO	United States
NCR00980	Detroit Lakes Public Utilities	MRO	United States
NCR11250	Dogwood Power Management, LLC	MRO	United States
NCR11241	Duke Energy Renewables Services, LLC	MRO	United States
NCR11733	East River Electric Power Cooperative, Inc	MRO	United States
NCR01227	East Texas Electric Cooperative Inc.	MRO	United States
NCR01092	Eastman Cogeneration Limited Partnership	MRO	United States
NCR11662	EDP Renewables North America LLC	MRO	United States
NCR10122	Exelon Wind 4, LLC	MRO	United States
NCR06046	Farmers' Electric Cooperative, Inc. Of New Mexico	MRO	United States
NCR11158	Fenton Power Partners 1, LLC	MRO	United States
NCR11314	Flat Ridge 2 Wind Energy LLC	MRO	United States
NCR10312	Flat Ridge Wind Energy, LLC	MRO	United States
NCR11692	Frontier Windpower, LLC	MRO	United States
NCR11444	Glencoe Light and Power Commission	MRO	United States
NCR10020	Golden Spread Electric Cooperative, Inc.	MRO	United States
NCR11153	Golden Spread Panhandle Wind Ranch, LLC	MRO	United States
NCR01101	Grand River Dam Authority	MRO	United States
NCR11682	Grande Prairie Wind, LLC	MRO	United States
NCR11835	GRE HERC Services LLC	MRO	United States
NCR11070	Great Plains Windpark, LLC	MRO	United States
NCR00992	Great River Energy	MRO	United States
NCR11687	Great Western Wind Energy, LLC	MRO	United States
NCR01103	Green Country Energy, LLC	MRO	United States
NCR01104	Green Country Operating Services, LLC	MRO	United States
NCR10105	Hartford Electric	MRO	United States
NCR00993	Hastings Utilities	MRO	United States
NCR00381	Hennepin County, MN	MRO	United States
NCR00997	Hutchinson Utilities Commission	MRO	United States
NCR01072	Independence Power & Light (Independence, Missouri)	MRO	United States
NCR10244	Invenergy Cannon Falls, LLC	MRO	United States
NCR11718	Invenergy Services LLC	MRO	United States
NCR11257	Ironwood Windpower, LLC	MRO	United States
NCR10400	ITC Great Plains, LLC	MRO	United States
NCR10192	ITC Midwest	MRO	United States
NCR10106	Jefferson Utilities	MRO	United States
NCR01107	Kansas City Power & Light Company	MRO	United States
NCR01109	Kansas Electric Power Cooperative, Inc.	MRO	United States
NCR10107	Kaukauna Utilities	MRO	United States
NCR11617	Kingfisher Wind, LLC c/o Apex Wind Asset Management	MRO	United States
NCR01113	Kiowa Power Partners, LLC	MRO	United States
NCR11180	Lakefield Wind Project, LLC	MRO	United States
NCR06047	Lea County Electric Cooperative, Inc.	MRO	United States
NCR10301	Lea Power Partners, LLC	MRO	United States
NCR01001	Lincoln Electric System	MRO	United States

NCR Matrix (with Dates)

NCR10226	Llano Estacado Wind, LP	MRO	United States
NCR10022	LSP-Cottage Grove, LP	MRO	United States
NCR06048	Lubbock Power And Light	MRO	United States
NCR00818	Madison Gas And Electric Company	MRO	United States
NCR01003	Manitoba Hydro	MRO	Manitoba
NCR01006	Marshall Municipal Utilities	MRO	United States
NCR01007	Marshfield Utilities	MRO	United States
NCR11739	McKenzie Electric Cooperative	MRO	United States
NCR11893	Meadowlark Wind I LLC (New Frontier)	MRO	Manitoba
NCR10108	Menasha Utilities	MRO	United States
NCR11772	Meridian Limited Partnership	MRO	Saskatchewan
NCR00824	MidAmerican Energy Company	MRO	United States
NCR00826	Midcontinent Independent System Operator, Inc.	MRO	United States
NCR01118	Midwest Energy, Inc.	MRO	United States
NCR01012	Minnesota Municipal Power Agency	MRO	United States
NCR00674	Minnesota Power (Allete, Inc.)	MRO	United States
NCR01013	Minnkota Power Cooperative, Inc.	MRO	United States
NCR03044	MISO-MBHydro Contingency Reserve Sharing Group	MRO	United States
NCR01014	Missouri Basin Municipal Power Agency (MRES)	MRO	United States
NCR01015	Montana-Dakota Utilities Company	MRO	United States
NCR01016	Moorhead Public Service	MRO	United States
NCR11740	Mountrail-Williams Electric Cooperative	MRO	United States
NCR00303	Municipal Energy Agency Of Nebraska	MRO	United States
NCR00967	Muscatine Power & Water (Board Of Water, Electric & Communications)	MRO	United States
NCR06054	NAES Corporation - Dogwood	MRO	United States
NCR11565	NAES Corporation - Cottage Grove	MRO	United States
NCR11236	NAES Corporation - Goodman Energy Center	MRO	United States
NCR01018	Nebraska Public Power District	MRO	United States
NCR10019	NextEra Energy Resources, LLC	MRO	United States
NCR11721	North Battleford Power L.P.	MRO	Saskatchewan
NCR11684	North Star Solar PV, LLC	MRO	United States
NCR11607	Northeast Texas Electric Cooperative - HCPP	MRO	United States
NCR01124	Northeast Texas Electric Cooperative, Inc	MRO	United States
NCR01020	Northern States Power (Xcel Energy)	MRO	United States
NCR11741	Northwest Iowa Power Cooperative	MRO	United States
NCR01021	NorthWestern Energy	MRO	United States
NCR11642	NRG Energy Services - Golden Spread	MRO	United States
NCR11730	NRG Energy Services-Panhandle Wind Ranch (GOP)	MRO	United States
NCR10110	Oconomowoc Utilities	MRO	United States
NCR11683	Odell Wind Farm, LLC	MRO	United States
NCR01130	Oklahoma Gas And Electric Co.	MRO	United States
NCR04108	Oklahoma Municipal Power Authority	MRO	United States
NCR11874	Olympia Renewable Platform	MRO	United States
NCR00860	Omaha Public Power District	MRO	United States
NCR11485	Oneta Power, LLC	MRO	United States
NCR01023	Otter Tail Power Company	MRO	United States
NCR01135	Paragould Light & Water Commission	MRO	United States
NCR11808	Pattern Operators LP	MRO	United States
NCR11877	Persimmon Creek Wind Farm 1, LLC	MRO	United States
NCR01024	Pierre Municipal Utilities	MRO	United States
NCR10111	Plymouth Utilities	MRO	United States
NCR11268	Pocahontas Prairie Wind LLC	MRO	United States

NCR Matrix (with Dates)

NCR11953	Prairie Breeze Wind Energy II LLC	MRO	United States
NCR11954	Prairie Breeze Wind Energy III LLC	MRO	United States
NCR11460	Prairie Breeze Wind Energy LLC	MRO	United States
NCR06010	Rayburn Country Electric Cooperative, Inc.	MRO	United States
NCR11779	Red Dirt Wind Project, LLC	MRO	United States
NCR10304	Red Hills Wind Project, LLC.	MRO	United States
NCR11823	Red Pine Wind Project, LLC	MRO	United States
NCR10112	Reedsburg Utility Commission	MRO	United States
NCR10113	River Falls Municipal Utilities	MRO	United States
NCR01027	Rochester Public Utilities	MRO	United States
NCR11780	Rock Falls Wind Farm, LLC	MRO	United States
NCR11946	RockGen Energy, LLC	MRO	United States
NCR11560	Roosevelt Wind Project, LLC	MRO	United States
NCR11743	Roughrider Electric Cooperative, Inc	MRO	United States
NCR01029	Saskatchewan Power Corporation	MRO	Saskatchewan
NCR11770	SaskPower International Inc.	MRO	Saskatchewan
NCR11742	Sheridan Electric Cooperative, Inc.	MRO	United States
NCR11586	Slate Creek Wind, LLC	MRO	United States
NCR11919	Solomon Forks Wind Project, LLC	MRO	United States
NCR11685	SOLV, Inc.	MRO	United States
NCR01030	Southern Minnesota Municipal Power Agency	MRO	United States
NCR11695	Southern Power Company	MRO	United States
NCR01143	Southwest Power Pool, Inc.	MRO	United States
NCR01144	Southwestern Power Administration	MRO	United States
NCR01145	Southwestern Public Service Co. (Xcel Energy)	MRO	United States
NCR11322	Spearville 3, LLC	MRO	United States
NCR11323	Spinning Spur Wind, LLC	MRO	United States
NCR11722	Spy Hill Power L.P.	MRO	Saskatchewan
NCR11270	St. Joseph Windfarm Inc.	MRO	Manitoba
NCR11269	St. Leon Wind Energy LP	MRO	Manitoba
NCR11901	Stoneray Power Partners, LLC	MRO	United States
NCR01148	Sunflower Electric Power Corporation	MRO	United States
NCR11702	Sunflower Wind Project, LLC	MRO	United States
NCR10245	Tatanka Wind Power, LLC	MRO	United States
NCR00633	Tenaska Gateway Partners Ltd	MRO	United States
NCR01155	The Empire District Electric Company	MRO	United States
NCR11778	Thunder Ranch Wind Project, LLC	MRO	United States
NCR11539	Transource Energy, LLC	MRO	United States
NCR11231	Tri-County Electric Cooperative, Inc of Oklahoma	MRO	United States
NCR10102	Tri-State Generation And Transmission Association Inc. - Transmission	MRO	United States
NCR11738	Upper Missouri Power Cooperative	MRO	United States
NCR01033	Upper Peninsula Power Company	MRO	United States
NCR11880	Upstream Wind Energy, LLC	MRO	United States
NCR01357	USACE - Kansas City District	MRO	United States
NCR06037	USACE - Little Rock District	MRO	United States
NCR00978	USACE - Omaha District	MRO	United States
NCR06038	USACE - Tulsa District	MRO	United States
NCR11159	Wapsipinicon Wind Project, LLC	MRO	United States
NCR00658	Westar Energy, Inc.	MRO	United States
NCR05464	Western Area Power Administration - Rocky Mountain Region	MRO	United States
NCR01036	Western Area Power Administration - Upper Great Plains East	MRO	United States
NCR01160	Western Farmers Electric Cooperative	MRO	United States

NCR Matrix (with Dates)

NCR01038	Willmar Municipal Utilities	MRO	United States
NCR01042	Wisconsin Rapids Water Works & Lighting Commission	MRO	United States
NCR01040	WPPI Energy	MRO	United States
NCR11791	Alcoa Power Generating Inc. -Long Sault Division	NPCC	United States
NCR11387	Allegany Generating Station LLC	NPCC	United States
NCR07076	AP (Curtis Palmer) LLC	NPCC	United States
NCR11112	Astoria Energy II LLC	NPCC	United States
NCR00538	Astoria Energy, LLC	NPCC	United States
NCR07012	Astoria Generating Company L.P.	NPCC	United States
NCR10259	Avangrid Renewables	NPCC	United States
NCR11246	Bayonne Energy Center	NPCC	United States
NCR07015	Bear Swamp Power Company LLC	NPCC	United States
NCR10351	Berkshire Power Company, LLC	NPCC	United States
NCR11559	Berlin Station, LLC	NPCC	United States
NCR11675	Blue Sky West, LLC	NPCC	United States
NCR00503	BNY Power Operations, LLC	NPCC	United States
NCR07034	Bozrah Light and Power Company	NPCC	United States
NCR07022	Braintree Electric Light Department	NPCC	United States
NCR03035	Bridgeport Energy, LLC	NPCC	United States
NCR11647	Brookfield Power US Asset Management LLC	NPCC	United States
NCR11324	Brookfield White Pine Hydro, LLC	NPCC	United States
NCR10237	Brooklyn Navy Yard Cogeneration Partners, L.P.	NPCC	United States
NCR11459	Bucksport Generation LLC	NPCC	United States
NCR07024	Burlington Electric Department	NPCC	United States
NCR10353	Caithness Long Island, LLC	NPCC	United States
NCR00006	Calpine Corporation	NPCC	United States
NCR11056	CAMS - Connecticut	NPCC	United States
NCR11488	CAMS - New York, LLC	NPCC	United States
NCR10330	Canandaigua Power Partners, LLC	NPCC	United States
NCR07026	Capitol District Energy Center Cogeneration Associates, JV	NPCC	United States
NCR10354	Carr Street Generating Station, LP	NPCC	United States
NCR10355	Carthage Energy, LLC	NPCC	United States
NCR10382	Castleton Power, LLC	NPCC	United States
NCR11254	Cayuga Operating Company, LLC	NPCC	United States
NCR07028	Central Hudson Gas & Electric Corporation	NPCC	United States
NCR07029	Central Maine Power Company	NPCC	United States
NCR11949	CGX Operating Services, LLC	NPCC	United States
NCR07031	Chicopee Municipal Lighting Plant	NPCC	United States
NCR10357	CMEEC - Alfred L. Pierce Power Station	NPCC	United States
NCR11133	Connecticut Transmission Municipal Electric Energy Cooperative	NPCC	United States
NCR07046	Consolidated Edison Co of NY, Inc	NPCC	United States
NCR11088	Constellation Mystic Power, LLC	NPCC	United States
NCR11892	Copenhagen Wind Farm, LLC	NPCC	United States
NCR10009	Covanta Niagara LP	NPCC	United States
NCR10010	Covanta Onondaga LP	NPCC	United States
NCR10011	Covanta SEMASS LLC	NPCC	United States
NCR11828	CPV Towantic, LLC	NPCC	United States
NCR11827	CPV Valley, LLC	NPCC	United States
NCR07055	Cross Sound Cable Company, LLC.	NPCC	United States
NCR11487	Danskammer Energy, LLC	NPCC	United States
NCR07056	Danvers Electric Division	NPCC	United States
NCR02922	Dartmouth Power Associates, LP	NPCC	United States

NCR Matrix (with Dates)

NCR11878	Dominion Energy Generation Marketing, Inc.	NPCC	United States
NCR07061	Dominion Energy Manchester Street, Inc.	NPCC	United States
NCR07065	Dominion Energy Nuclear Connecticut, Inc.	NPCC	United States
NCR11662	EDP Renewables North America LLC	NPCC	United States
NCR07013	Emera, Maine	NPCC	United States
NCR11061	Empire Generating Co, LLC	NPCC	United States
NCR07073	Entergy Nuclear Indian Point 2, LLC	NPCC	United States
NCR07074	Entergy Nuclear Indian Point 3, LLC	NPCC	United States
NCR10358	Erie Boulevard Hydropower, LP	NPCC	United States
NCR00374	Essential Power Massachusetts, LLC	NPCC	United States
NCR00540	Essential Power Newington, LLC	NPCC	United States
NCR11727	Evergreen Gen Lead LLC	NPCC	United States
NCR11582	Evergreen Wind Power II, LLC	NPCC	United States
NCR07176	Eversource Energy Service Company	NPCC	United States
NCR04057	Exelon Generation Company, LLC	NPCC	United States
NCR00778	Exelon Generation Company, LLC - Exelon Nuclear	NPCC	United States
NCR11042	Fairport Municipal Commision	NPCC	United States
NCR10049	FirstLight Hydro Generating Company	NPCC	United States
NCR07086	Fitchburg Gas and Electric Light Company	NPCC	United States
NCR11819	Footprint Power Salem Harbor Development LP	NPCC	United States
NCR07090	Fortistar North Tonawanda	NPCC	United States
NCR11710	GenConn Energy LLC	NPCC	United States
NCR11873	GenOn Bowline	NPCC	United States
NCR11198	Granite Reliable Power, LLC	NPCC	United States
NCR07102	Granite State Electric Company	NPCC	United States
NCR10359	Great Lakes Hydro America - ME	NPCC	United States
NCR07220	Great River Hydro, LLC	NPCC	United States
NCR07103	Green Mountain Power Corporation	NPCC	United States
NCR11753	Greenidge Generation LLC	NPCC	United States
NCR07035	Groton Utilities	NPCC	United States
NCR11853	GSP Merrimack LLC	NPCC	United States
NCR11852	GSP Newington LLC	NPCC	United States
NCR11851	GSP Schiller LLC	NPCC	United States
NCR11766	Helix Maine Wind Development, LLC	NPCC	United States
NCR11796	Helix Ravenswood, LLC	NPCC	United States
NCR07106	Hingham Municipal Lighting Plant	NPCC	United States
NCR07107	Hudson Light and Power Department	NPCC	United States
NCR07109	HYDRO ONE NETWORKS INC.	NPCC	Ontario
NCR07110	Hydro-Québec Distribution	NPCC	Quebec
NCR07111	Hydro-Quebec Production	NPCC	Quebec
NCR07112	Hydro-Quebec TransEnergie	NPCC	Quebec
NCR10360	Indeck - Corinth, LP	NPCC	United States
NCR10361	Indeck - Olean, LP	NPCC	United States
NCR10362	Indeck - Oswego, LP	NPCC	United States
NCR10363	Indeck - Yerkes, LP	NPCC	United States
NCR10364	Indeck Energy Services of Silver Springs, LP	NPCC	United States
NCR00124	Ipswich Municipal Light Department	NPCC	United States
NCR07124	ISO-NE	NPCC	United States
NCR11436	Kendall Green Energy Holdings, LLC	NPCC	United States
NCR11126	Kleen Energy Systems, LLC.	NPCC	United States
NCR00164	Littleton Electric Light Department	NPCC	United States
NCR07132	Lockport Energy Associates	NPCC	United States

NCR Matrix (with Dates)

NCR07133	Long Island Power Authority	NPCC	United States
NCR10133	Luminant Energy Company LLC	NPCC	United States
NCR07134	Maine Electric Power Company	NPCC	United States
NCR11900	Manchester Street, L.L.C.	NPCC	United States
NCR07135	Mansfield Municipal Electric Department	NPCC	United States
NCR00208	Marblehead Municipal Light Department	NPCC	United States
NCR11793	Marco DM Holdings, LLC	NPCC	United States
NCR07136	Mass. Municipal Wholesale Electric Company	NPCC	United States
NCR11044	Massena Electric Department	NPCC	United States
NCR07045	Materials Innovation and Recycling Authority (MIRA)	NPCC	United States
NCR10251	Middleborough Gas and Electric Department	NPCC	United States
NCR00333	Middleton Municipal Electric Department	NPCC	United States
NCR07144	Millennium Power Partners, LP	NPCC	United States
NCR07037	Mohegan Tribal Utility Authority	NPCC	United States
NCR11535	NAES Corporation - Beaver Falls	NPCC	United States
NCR11866	NAES Corporation - Canal Station	NPCC	United States
NCR11705	NAES Corporation - Castleton Power	NPCC	United States
NCR11561	NAES Corporation - Cogen Technologies Linden Venture	NPCC	United States
NCR11795	NAES Corporation - Dighton	NPCC	United States
NCR11729	NAES Corporation - Empire	NPCC	United States
NCR07167	NAES Corporation - Lockport	NPCC	United States
NCR11794	NAES Corporation - Milford	NPCC	United States
NCR11243	NAES Corporation - MIRA - JETS	NPCC	United States
NCR11244	NAES Corporation - MIRA - PBF	NPCC	United States
NCR07169	NAES Corporation - North Tonawanda	NPCC	United States
NCR11536	NAES Corporation - Syracuse	NPCC	United States
NCR11127	NAES Corporation-Kleen Energy Systems, LLC.	NPCC	United States
NCR07128	National Grid Generation LLC	NPCC	United States
NCR11171	National Grid USA	NPCC	United States
NCR00130	Neptune Regional Transmission System, LLC	NPCC	United States
NCR07154	New Athens Generating Company, LLC	NPCC	United States
NCR07155	New Brunswick Power Corporation	NPCC	New Brunswick
NCR07159	New England Power Company	NPCC	United States
NCR07091	New Hampshire Transmission, LLC	NPCC	United States
NCR07160	New York Independent System Operator	NPCC	United States
NCR07161	New York Power Authority	NPCC	United States
NCR11639	New York Transco LLC	NPCC	United States
NCR10019	NextEra Energy Resources, LLC	NPCC	United States
NCR07163	Niagara Mohawk Power Corporation	NPCC	United States
NCR00126	North Attleborough Electric Department	NPCC	United States
NCR07038	Norwich Public Utilities	NPCC	United States
NCR00415	Norwood Municipal Light Department	NPCC	United States
NCR07178	Nova Scotia Power Inc.	NPCC	Nova Scotia
NCR11709	NRG Northeast	NPCC	United States
NCR07181	NYSEG	NPCC	United States
NCR11797	Ocean State Power, LLC	NPCC	United States
NCR07184	Ontario IESO	NPCC	Ontario
NCR07186	Orange and Rockland Utilities, Inc.	NPCC	United States
NCR07191	Peabody Municipal Light Plant	NPCC	United States
NCR10369	Penobscot Energy Recovery Company	NPCC	United States
NCR10342	Pinetree Power - Tamworth, Inc.	NPCC	United States
NCR07195	Pittsfield Generating Company LP	NPCC	United States

NCR Matrix (with Dates)

NCR11405	Plainfield Renewable Energy, LLC	NPCC	United States
NCR11045	Plattsburgh Municipal Lighting Department	NPCC	United States
NCR10370	Power City Partners, LP	NPCC	United States
NCR00893	PSEG Fossil LLC	NPCC	United States
NCR11504	Purenergy Operating Services LLC Selkirk	NPCC	United States
NCR10026	PurEnergy Operating Services, LLC	NPCC	United States
NCR07206	Reading Municipal Light Department	NPCC	United States
NCR11337	ReEnergy Black River	NPCC	United States
NCR11514	ReEnergy Livermore Falls	NPCC	United States
NCR11340	ReEnergy Lyonsdale	NPCC	United States
NCR10352	ReEnergy Stratton	NPCC	United States
NCR10371	Rensselaer Generating LLC	NPCC	United States
NCR11200	Rhode Island State Energy Center, LP	NPCC	United States
NCR07207	Rochester Gas and Electric	NPCC	United States
NCR11341	Roseton Generating LLC	NPCC	United States
NCR11130	Rumford Power Inc.	NPCC	United States
NCR11046	Salamanca Board of Public Utilities	NPCC	United States
NCR07208	Saranac Power Partners, L.P.	NPCC	United States
NCR11534	SBF New York, L.L.C.	NPCC	United States
NCR10051	Selkirk Cogen Partners, L.P.	NPCC	United States
NCR10372	Seneca Power Partners, LP	NPCC	United States
NCR10299	Sheldon Energy, LLC	NPCC	United States
NCR10252	Shrewsbury Electric and Cable Operations	NPCC	United States
NCR11253	Somerset Operating Company, LLC	NPCC	United States
NCR11792	South Hadley Electric Light Department	NPCC	United States
NCR10373	Sterling Power Partners	NPCC	United States
NCR11408	Stony Creek Energy LLC	NPCC	United States
NCR11152	Tanner Street Generation, LLC	NPCC	United States
NCR07214	Taunton Municipal Lighting Plant	NPCC	United States
NCR07217	The City of Holyoke Gas and Electric Department	NPCC	United States
NCR11649	Third Taxing District of East Norwalk	NPCC	United States
NCR11129	Tiverton Power LLC	NPCC	United States
NCR07041	Town of Wallingford Dept of Utilities	NPCC	United States
NCR07222	United Illuminating Company	NPCC	United States
NCR07223	Unitil Energy Systems, Inc.	NPCC	United States
NCR10366	Valcour Altona Windpark, LLC	NPCC	United States
NCR10271	Valcour Bliss Windpark, LLC	NPCC	United States
NCR10367	Valcour Chateaugay Windpark, LLC	NPCC	United States
NCR10272	Valcour Clinton Windpark, LLC	NPCC	United States
NCR10273	Valcour Ellenburg Windpark, LLC	NPCC	United States
NCR10368	Valcour Wethersfield Windpark, LLC	NPCC	United States
NCR07224	Vermont Electric Cooperative	NPCC	United States
NCR07227	Vermont Public Power Supply Authority	NPCC	United States
NCR07228	Vermont Transco, LLC	NPCC	United States
NCR07229	Verso Androscoggin LLC	NPCC	United States
NCR11041	Village of Arcade	NPCC	United States
NCR11043	Village of Lake Placid	NPCC	United States
NCR11047	Village of Solvay Electric Dept.	NPCC	United States
NCR00200	Vistra Energy Corp.	NPCC	United States
NCR10253	Wakefield Municipal Gas and Light Department	NPCC	United States
NCR11102	Wallingford Energy LLC	NPCC	United States
NCR10339	Waterbury Generation, LLC	NPCC	United States

NCR Matrix (with Dates)

NCR10374	Waterside Power, LLC	NPCC	United States
NCR07230	Wellesley Municipal Light Plant	NPCC	United States
NCR07233	Westfield Gas & Electric Light Department	NPCC	United States
NCR02923	Wheelabrator Bridgeport, L.P.	NPCC	United States
NCR10172	Wheelabrator Millbury Inc.	NPCC	United States
NCR10033	Wheelabrator Saugus J.V.	NPCC	United States
NCR10221	Wheelabrator Westchester Inc.	NPCC	United States
NCR11516	ACE O&M, LLC	RF	United States
NCR11645	AE Power Services LLC	RF	United States
NCR11401	AEP Generation Resources Inc.	RF	United States
NCR11178	AES Laurel Mountain, LLC	RF	United States
NCR00666	AES Warrior Run	RF	United States
NCR00667	Alcoa Power Generating Inc.	RF	United States
NCR11785	Algonquin Power Co.	RF	United States
NCR08039	Allegheny Ridge Wind Farm, LLC	RF	United States
NCR10337	Alliant Energy - East	RF	United States
NCR00680	American Bituminous Power Partners, L.P.	RF	United States
NCR00682	American Electric Power Service Corporation as agent for Appalachian Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company, Wheeling Power Company, AEP Ohio Transmission Company, AEP Appalachian Transmission Company, AEP West Virginia Transmission Company, AEP Indiana Michigan Transmission Company and AEP Kentucky Transmission Company, Inc.	RF	United States
NCR00683	American Municipal Power Inc.	RF	United States
NCR00685	American Transmission Co. LLC	RF	United States
NCR11899	AMP Transmission, L.L.C.	RF	United States
NCR11787	Apple Blossom Wind, LLC	RF	United States
NCR11760	Armstrong Power, LLC	RF	United States
NCR00688	Atlantic City Electric Company	RF	United States
NCR11659	Aurora Generation, LLC	RF	United States
NCR10259	Avangrid Renewables	RF	United States
NCR00689	Baltimore Gas and Electric Company	RF	United States
NCR11040	Beech Ridge Energy LLC	RF	United States
NCR00170	Benton County Wind Farm, LLC	RF	United States
NCR00690	Big Sandy Peaker Plant, LLC	RF	United States
NCR11461	Big Sky Wind, LLC	RF	United States
NCR11910	Birdsboro Power LLC	RF	United States
NCR11289	Bishop Hill Energy LLC	RF	United States
NCR11647	Brookfield Power US Asset Management LLC	RF	United States
NCR11837	Buchanan Generation, LLC	RF	United States
NCR00700	Buckeye Power, Inc.	RF	United States
NCR11225	Butler Rural Electric Cooperative, Inc.	RF	United States
NCR00006	Calpine Corporation	RF	United States
NCR00214	Camp Grove Wind Farm, LLC	RF	United States
NCR11786	Carroll County Energy, LLC	RF	United States
NCR11949	CGX Operating Services, LLC	RF	United States
NCR00708	Chambers Cogeneration, Limited Partnership	RF	United States
NCR11820	Chambersburg Energy, LLC	RF	United States
NCR10316	CHI Power, Inc.	RF	United States
NCR00712	City of Cleveland, Dept. of Public Utilities, Division of Cleveland Public Power	RF	United States

NCR Matrix (with Dates)

NCR02000	City of Columbus, Ohio, Department of Public Utilities, Division of Water And Power	RF	United States
NCR00713	City of Dover	RF	United States
NCR08007	City of Dover - Ohio	RF	United States
NCR00716	City of Greenfield	RF	United States
NCR00718	City of Lansing by its Board of Water and Light	RF	United States
NCR02710	City of Niles Light Department	RF	United States
NCR00721	City of Rochelle	RF	United States
NCR00722	City of Vineland New Jersey	RF	United States
NCR06019	City of Westerville Electric Division	RF	United States
NCR11869	Clean Energy Future-Lordstown, LLC	RF	United States
NCR00724	Cloverland Electric Cooperative	RF	United States
NCR00727	CMS Generation Michigan Power, L. L. C.	RF	United States
NCR08012	Coldwater Board of Public Utilities	RF	United States
NCR10229	Commonwealth Chesapeake Company, LLC	RF	United States
NCR08013	Commonwealth Edison Company	RF	United States
NCR11216	Constellation Maryland Peaker Fleet	RF	United States
NCR00740	Consumers Energy Company	RF	United States
NCR00742	Cordova Energy Company, LLC	RF	United States
NCR00743	Covanta Delaware	RF	United States
NCR10389	Covanta Plymouth Renewable Energy, LLC.	RF	United States
NCR10388	Covanta York Renewable Energy, LLC.	RF	United States
NCR11952	CPV Fairview, LLC	RF	United States
NCR11706	CPV Maryland, LLC	RF	United States
NCR11585	CPV Shore, LLC	RF	United States
NCR10209	Crete Energy Venture, LLC	RF	United States
NCR08014	Cuyahoga Falls Electric System	RF	United States
NCR00751	Dearborn Industrial Generation, L. L. C.	RF	United States
NCR11173	Delaware City Refining Company LLC	RF	United States
NCR00752	Delmarva Power & Light Company	RF	United States
NCR00780	Dominion Energy Fairless, LLC	RF	United States
NCR11878	Dominion Energy Generation Marketing, Inc.	RF	United States
NCR00753	DTE Electric Company	RF	United States
NCR00761	Duke Energy Corporation	RF	United States
NCR00762	Duquesne Light Company	RF	United States
NCR11228	Eagle Point Power Generation, LLC	RF	United States
NCR11686	Eastern Shore Solar, LLC	RF	United States
NCR00768	Easton Utilities Commission	RF	United States
NCR08051	Ebensburg Power Company	RF	United States
NCR10305	EcoGrove Wind LLC	RF	United States
NCR11662	EDP Renewables North America LLC	RF	United States
NCR10257	EFS Parlin Holdings LLC	RF	United States
NCR11437	Elgin Energy Center, LLC	RF	United States
NCR11378	Elwood Energy, LLC	RF	United States
NCR08052	Entergy Nuclear Palisades, LLC	RF	United States
NCR00212	Essential Power OPP, LLC	RF	United States
NCR00251	Essential Power Rock Springs, LLC	RF	United States
NCR04057	Exelon Generation Company, LLC	RF	United States
NCR00778	Exelon Generation Company, LLC - Exelon Nuclear	RF	United States
NCR11898	Fairless Energy, L.L.C.	RF	United States
NCR11317	FirstEnergy Generation and Marketing as agent for FirstEnergy Generation; FirstEnergy Solutions Corp.	RF	United States

NCR Matrix (with Dates)

NCR11316	FirstEnergy Nuclear as agent for FirstEnergy Nuclear Generation, LLC; FirstEnergy Nuclear Operating Company	RF	United States
NCR11315	FirstEnergy Utilities as agent for Allegheny Energy Supply Company, L.L.C., American Transmission Systems, Incorporated; The Cleveland Electric Illuminating Company; Jersey Central Power & Light Company; Metropolitan Edison Company; Mid-Atlantic Interstate Transmission; Monongahela Power Company; Ohio Edison Company; Pennsylvania Electric Company; Pennsylvania Power Company; The Potomac Edison Company; The Toledo Edison Company; Trans-Allegheny Interstate Line Company; and West Penn Power Company	RF	United States
NCR00376	Forked River Power LLC	RF	United States
NCR03040	Fowler Ridge II Wind Farm LLC	RF	United States
NCR10308	Fowler Ridge III Wind Farm LLC	RF	United States
NCR10307	Fowler Ridge Wind Farm LLC	RF	United States
NCR11821	Gans Energy, LLC	RF	United States
NCR11945	Garrison Energy Center, LLC	RF	United States
NCR11747	General Electric International - Linden VFT	RF	United States
NCR11696	General Electric International - Marcus Hook	RF	United States
NCR11871	GenOn Mid-Atlantic, LLC	RF	United States
NCR11137	GenOn Northeast Management Company	RF	United States
NCR11136	GenOn Power Midwest	RF	United States
NCR11141	GenOn REMA 1	RF	United States
NCR11029	Grand Ridge Energy II LLC	RF	United States
NCR11030	Grand Ridge Energy III LLC	RF	United States
NCR11031	Grand Ridge Energy IV LLC	RF	United States
NCR10306	Grand Ridge Energy LLC	RF	United States
NCR11235	Gratiot County Wind LLC	RF	United States
NCR11749	Helix Ironwood LLC	RF	United States
NCR11297	Homer City Generation, L.P.	RF	United States
NCR00794	Hoosier Energy REC, Inc.	RF	United States
NCR11366	Hudson Transmission Partners, LLC	RF	United States
NCR11859	Hunterstown Combined Cycle Generating Station	RF	United States
NCR00796	Indiana Municipal Power Agency	RF	United States
NCR00798	Indianapolis Power & Light Company	RF	United States
NCR11335	Interpower/Ahlcon Partners Limited Partnership	RF	United States
NCR11513	Invenergy Nelson LLC	RF	United States
NCR11748	IPSC Brandywine Power	RF	United States
NCR11638	ITC Interconnection LLC	RF	United States
NCR00803	ITC Transmission	RF	United States
NCR11712	Kelly Creek Wind, LLC	RF	United States
NCR00810	Keystone Urban Renewal, LP	RF	United States
NCR11475	KMC Thermo, LLC	RF	United States
NCR11836	Lackawanna Energy Center LLC	RF	United States
NCR11447	Lake Lynn Generation, LLC	RF	United States
NCR00168	Lakewood Cogeneration, LP	RF	United States
NCR11788	Lee County Generating Station, LLC	RF	United States
NCR11724	Lightstone Generation LLC	RF	United States
NCR10208	Lincoln Generating Facility, LLC	RF	United States
NCR11208	Longview Power LLC	RF	United States
NCR11107	LSP University Park, LLC	RF	United States
NCR00817	LSP-Whitewater, LP	RF	United States
NCR10133	Luminant Energy Company LLC	RF	United States

NCR Matrix (with Dates)

NCR11311	Mehoopany Wind Energy LLC	RF	United States
NCR11909	Mendota Hills, LLC	RF	United States
NCR00820	METC	RF	United States
NCR08023	Michigan Electric Coordinated Systems	RF	United States
NCR11409	Michigan Power LP	RF	United States
NCR00822	Michigan Public Power Agency	RF	United States
NCR00826	Midcontinent Independent System Operator, Inc.	RF	United States
NCR10282	Midland Cogeneration Venture, Limited Partnership	RF	United States
NCR03044	MISO-MBHydro Contingency Reserve Sharing Group	RF	United States
NCR11842	Montpelier Generating Station, LLC	RF	United States
NCR00834	Morgantown Energy Associates	RF	United States
NCR10283	Morris Cogeneration, LLC	RF	United States
NCR11832	Moxie Freedom LLC	RF	United States
NCR00836	Municipal Light and Power - City of Anderson	RF	United States
NCR00839	NAES Corporation - Big Sandy	RF	United States
NCR11911	NAES Corporation - Birdsboro Power	RF	United States
NCR10234	NAES Corporation - Chesapeake	RF	United States
NCR11562	NAES Corporation - East Coast Power Linden Holdings	RF	United States
NCR11017	NAES Corporation - Lawrence	RF	United States
NCR11831	NAES Corporation - Middletown Energy Center	RF	United States
NCR11767	NAES Corporation - Red Oak	RF	United States
NCR11728	NAES Corporation - Wabash River Highland	RF	United States
NCR11564	NAES Corporation - Whitewater	RF	United States
NCR00849	NAES Corporation - Wolf Hills	RF	United States
NCR11018	NAES Corporation - Worthington	RF	United States
NCR11527	NAES Corporation-Newark Energy Center	RF	United States
NCR00293	NedPower Mount Storm, LLC	RF	United States
NCR00130	Neptune Regional Transmission System, LLC	RF	United States
NCR10295	New Covert Generating Company, LLC	RF	United States
NCR11526	Newark Energy Center, LLC	RF	United States
NCR10019	NextEra Energy Resources, LLC	RF	United States
NCR00852	Northampton Generating Company, LP	RF	United States
NCR11553	Northeastern Rural Electric Membership Cooperative	RF	United States
NCR02611	Northern Indiana Public Service Company LLC	RF	United States
NCR11879	Northwest Ohio Wind, LLC	RF	United States
NCR11715	NRG East	RF	United States
NCR11581	NRG Energy Services LLC - Morgantown	RF	United States
NCR11843	O.H. Hutchings CT, LLC	RF	United States
NCR00857	Ohio Valley Electric Corporation	RF	United States
NCR00859	Old Dominion Electric Cooperative	RF	United States
NCR11731	Oregon Clean Energy, LLC	RF	United States
NCR11840	Panda Hummel Station, LLC	RF	United States
NCR11611	Panda Liberty LLC	RF	United States
NCR11654	Panda Patriot LLC	RF	United States
NCR11808	Pattern Operators LP	RF	United States
NCR08026	PECO Energy Company	RF	United States
NCR11569	Pilot Hill Wind, LLC	RF	United States
NCR11861	Pioneer Transmission, LLC	RF	United States
NCR00879	PJM Interconnection, LLC	RF	United States
NCR00881	Potomac Electric Power Company	RF	United States
NCR00884	PPL Electric Utilities Corporation	RF	United States
NCR00893	PSEG Fossil LLC	RF	United States

NCR Matrix (with Dates)

NCR00895	PSEG Nuclear LLC	RF	United States
NCR00896	Public Service Electric & Gas Company	RF	United States
NCR10026	PurEnergy Operating Services, LLC	RF	United States
NCR11800	Radford's Run Wind Farm, LLC	RF	United States
NCR11308	Raven FS Property Holdings LLC	RF	United States
NCR00909	Richmond Power and Light	RF	United States
NCR03012	Riverside Generating Company, LLC	RF	United States
NCR11660	Rockford Generation, LLC	RF	United States
NCR00863	Rockland Electric Company	RF	United States
NCR03009	Rocky Road Power, LLC	RF	United States
NCR00420	Rolling Hills Generating, LLC	RF	United States
NCR00911	Safe Harbor Water Power Corporation	RF	United States
NCR00838	Sapphire Power Marketing LLC	RF	United States
NCR00912	Scrubgrass Generating Company, LP	RF	United States
NCR11446	Seneca Generation, LLC	RF	United States
NCR11615	Seward Generation, LLC	RF	United States
NCR08031	South Central Power Co.	RF	United States
NCR00917	Southern Indiana Gas & Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc.	RF	United States
NCR00918	Southern Maryland Electric Cooperative, Inc.	RF	United States
NCR11822	Springdale Energy, LLC	RF	United States
NCR11812	St. Joseph Energy Center, LLC	RF	United States
NCR00889	Susquehanna Nuclear, LLC	RF	United States
NCR00925	T.E.S. Filer City Station Limited Partnership	RF	United States
NCR11844	Tait Electric Generating Station, LLC	RF	United States
NCR11362	Talen Generation, LLC	RF	United States
NCR11097	TAQA Gen X LLC	RF	United States
NCR11882	Tenaska Pennsylvania Partners, LLC	RF	United States
NCR08073	The City of Hamilton, Ohio	RF	United States
NCR00748	The Dayton Power and Light Company	RF	United States
NCR11925	Transource West Virginia, LLC	RF	United States
NCR11759	Troy Energy, LLC	RF	United States
NCR11280	Twin Ridges Wind Farm	RF	United States
NCR04167	U.S. Department of Energy	RF	United States
NCR00935	UGI Utilities, Inc.	RF	United States
NCR00936	University Park Energy, LLC	RF	United States
NCR11716	Upper Michigan Energy Resources Corporation	RF	United States
NCR08034	US Operating Services Company - Chambers	RF	United States
NCR08036	US Operating Services Company - Logan	RF	United States
NCR11917	Vermillion Power, L.L.C.	RF	United States
NCR00200	Vistra Energy Corp.	RF	United States
NCR00940	Wabash Valley Power Association, Inc.	RF	United States
NCR06020	Wadsworth Electric & Communications	RF	United States
NCR11876	Walleye Power, LLC	RF	United States
NCR11890	Walnut Ridge Wind, LLC	RF	United States
NCR00941	Washington City Light & Power	RF	United States
NCR11391	West Deptford Energy, LLC	RF	United States
NCR08077	Wheelabrator Falls Inc.	RF	United States
NCR00417	Whiting Clean Energy, Inc.	RF	United States
NCR11284	Wildcat Wind Farm I, LLC	RF	United States
NCR11498	Wisconsin Electric Power - MIUP	RF	United States
NCR00951	Wisconsin Electric Power Company	RF	United States

NCR Matrix (with Dates)

NCR00952	Wisconsin Public Service Corporation	RF	United States
NCR00953	Wolf Hills Energy, LLC	RF	United States
NCR00954	Wolverine Power Supply Cooperative, Inc.	RF	United States
NCR11870	Worley - Clean Energy Future-Lordstown	RF	United States
NCR11732	Worley - Oregon Clean Energy	RF	United States
NCR11813	Worley - St. Joseph Energy Center	RF	United States
NCR11845	Yankee Street, LLC	RF	United States
NCR11050	AL Sandersville, LLC	SERC	United States
NCR11833	AL Solar A, LLC	SERC	United States
NCR01165	Alabama Municipal Electric Authority	SERC	United States
NCR01166	Alabama Power Company	SERC	United States
NCR10248	Ameren Missouri	SERC	United States
NCR01175	Ameren Services Company	SERC	United States
NCR00683	American Municipal Power Inc.	SERC	United States
NCR01060	Arkansas Electric Cooperative Corporation	SERC	United States
NCR01177	Associated Electric Cooperative, Inc.	SERC	United States
NCR10259	Avangrid Renewables	SERC	United States
NCR01178	Baconton Power LLC	SERC	United States
NCR00003	Bartow, City of	SERC	United States
NCR00004	Beaches Energy Services of Jacksonville Beach	SERC	United States
NCR11606	Beauregard Electric Cooperative, Inc.	SERC	United States
NCR01180	Big Rivers Electric Corporation	SERC	United States
NCR11309	Bishop Hill Energy II LLC	SERC	United States
NCR11856	Bishop Hill Energy III LLC	SERC	United States
NCR01183	Blue Ridge Electric Membership Corporation	SERC	United States
NCR01186	Brazos Electric Power Cooperative, Inc.	SERC	United States
NCR11313	Broad River Energy, LLC	SERC	United States
NCR11647	Brookfield Power US Asset Management LLC	SERC	United States
NCR11286	Brookfield Smoky Mountain Hydropower LLC	SERC	United States
NCR11192	Calhoun Power Company, LLC	SERC	United States
NCR11318	California Ridge Energy LLC	SERC	United States
NCR00006	Calpine Corporation	SERC	United States
NCR11479	Carville Energy LLC	SERC	United States
NCR09001	Catalyst Old River Hydroelectric Limited Partnership	SERC	United States
NCR01191	Central Electric Power Cooperative Inc	SERC	United States
NCR11466	Century Aluminum of Kentucky GP	SERC	United States
NCR10390	CER Generation LLC	SERC	United States
NCR11191	Cherokee County Cogeneration Partners, LLC	SERC	United States
NCR10316	CHI Power, Inc.	SERC	United States
NCR11418	Choctaw Generation Limited Partnership, LLLP	SERC	United States
NCR06033	City of Abbeville	SERC	United States
NCR01068	City Of Alexandria	SERC	United States
NCR01195	City of Camden	SERC	United States
NCR01071	City Of Clarksdale, Mississippi	SERC	United States
NCR01196	City of Columbia, MO	SERC	United States
NCR01199	City of Dalton d/b/a Dalton Utilities	SERC	United States
NCR11916	City of Henderson, KY, Utility Commission, DBA Henderson Municipal Power & Light	SERC	United States
NCR11010	City of Leesburg	SERC	United States
NCR11091	City of North Little Rock Electric Department	SERC	United States
NCR00054	City of Ocala Electric Utility	SERC	United States
NCR01202	City of Orangeburg Department of Public Utilities	SERC	United States

NCR Matrix (with Dates)

NCR01328	City of Springfield, IL - CWLP	SERC	United States
NCR11100	City of West Memphis (DP-UFLS)	SERC	United States
NCR01082	City Water & Light - Jonesboro, Arkansas	SERC	United States
NCR00499	Claiborne Electric Cooperative, Inc.	SERC	United States
NCR01083	Cleco Corporate Holdings LLC	SERC	United States
NCR11480	Columbia Energy LLC	SERC	United States
NCR11622	Conetoe II Solar, LLC	SERC	United States
NCR11092	Conway Corporation	SERC	United States
NCR01315	Cooperative Energy	SERC	United States
NCR01210	Cottonwood Energy Company LP	SERC	United States
NCR10054	Covanta Palm Beach Resource Recovery, LLC.	SERC	United States
NCR01211	Covanta, Fairfax, Inc.	SERC	United States
NCR09021	CPI USA North Carolina LLC (Roxboro)	SERC	United States
NCR09020	CPI USA North Carolina LLC (Southport)	SERC	United States
NCR01212	Craven County Wood Energy Limited Partnership	SERC	United States
NCR01169	Cube Hydro Carolinas, LLC	SERC	United States
NCR11867	Cypress Creek O&M, LLC	SERC	United States
NCR11481	Decatur Energy Center, LLC	SERC	United States
NCR11915	DEPCOM Power	SERC	United States
NCR00416	Dixie Electric Membership Corporation	SERC	United States
NCR11878	Dominion Energy Generation Marketing, Inc.	SERC	United States
NCR00915	Dominion Energy South Carolina, Inc.	SERC	United States
NCR11860	Dorchester Biomass, LLC	SERC	United States
NCR11193	Doswell Limited Partnership	SERC	United States
NCR01219	Duke Energy Carolinas, LLC	SERC	United States
NCR00063	Duke Energy Florida, LLC	SERC	United States
NCR01298	Duke Energy Progress, LLC	SERC	United States
NCR11608	Duke Energy Renewables Services, LLC	SERC	United States
NCR01225	East Kentucky Power Cooperative	SERC	United States
NCR01226	East Mississippi Electric Power Association	SERC	United States
NCR01227	East Texas Electric Cooperative Inc.	SERC	United States
NCR01228	Edgecombe Genco, LLC	SERC	United States
NCR01229	Edgecombe Operating Services, LLC	SERC	United States
NCR11662	EDP Renewables North America LLC	SERC	United States
NCR11597	Effingham County Power, LLC	SERC	United States
NCR11399	Electric Energy, Inc.	SERC	United States
NCR11355	ElectriCities of North Carolina, Inc.	SERC	United States
NCR01232	EnergyUnited Electric Membership Corporation	SERC	United States
NCR01234	Entergy	SERC	United States
NCR11167	Entergy - Fossil & Hydroelectric Generation	SERC	United States
NCR11166	Entergy - Nuclear	SERC	United States
NCR11656	ETEC – Hardin County Peaking Facility	SERC	United States
NCR11657	ETEC – San Jacinto County Peaking Facility	SERC	United States
NCR11847	ETEC – Woodville Renewable Power Project	SERC	United States
NCR11658	EthosEnergy – Hardin County Peaking Facility	SERC	United States
NCR11655	EthosEnergy – San Jacinto County Peaking Facility	SERC	United States
NCR11848	EthosEnergy – Woodville Renewable Power Project	SERC	United States
NCR00778	Exelon Generation Company, LLC - Exelon Nuclear	SERC	United States
NCR00128	ExxonMobil Corp - Baton Rouge	SERC	United States
NCR01239	ExxonMobil Oil Corporation - Beaumont Refinery	SERC	United States
NCR01240	Fayetteville Public Works Commission	SERC	United States
NCR00021	Florida Keys Electric Cooperative Assn	SERC	United States

NCR Matrix (with Dates)

NCR00022	Florida Municipal Power Agency	SERC	United States
NCR00023	Florida Municipal Power Pool	SERC	United States
NCR00024	Florida Power & Light Co.	SERC	United States
NCR01241	Florida Power & Light Company	SERC	United States
NCR00025	Florida Public Utilities Company	SERC	United States
NCR00026	Florida Reliability Coordinating Council, Inc.	SERC	United States
NCR00464	Florida Reserve Sharing Group	SERC	United States
NCR00027	Fort Pierce Utilities Authority	SERC	United States
NCR01244	French Broad Electric Membership Corporation	SERC	United States
NCR00032	Gainesville Regional Utilities	SERC	United States
NCR00069	General Electric International - Shady Hills	SERC	United States
NCR11761	General Electric International – Birchwood	SERC	United States
NCR11875	GenOn Florida	SERC	United States
NCR11204	GenOn Wholesale Generation	SERC	United States
NCR01247	Georgia Power Company	SERC	United States
NCR01248	Georgia System Operations Corporation	SERC	United States
NCR01249	Georgia Transmission Corporation	SERC	United States
NCR11434	Gibson City Energy Center, LLC	SERC	United States
NCR11435	Grand Tower Energy Center, LLC	SERC	United States
NCR11623	Green Power Solutions of Georgia, LLC	SERC	United States
NCR11393	Gridforce Energy Management, LLC	SERC	United States
NCR01252	Gulf Power Company	SERC	United States
NCR00035	Hardee Power Partners Limited	SERC	United States
NCR10293	Haywood Electric Membership Corporation	SERC	United States
NCR01254	Henderson Municipal Power & Light	SERC	United States
NCR01255	Holland Energy, LLC	SERC	United States
NCR00037	Homestead, City of	SERC	United States
NCR11537	Hoopeston Wind, LLC	SERC	United States
NCR00794	Hoosier Energy REC, Inc.	SERC	United States
NCR00795	Illinois Municipal Electric Agency	SERC	United States
NCR00039	Indiantown Cogeneration LP	SERC	United States
NCR11768	Innovative Solar 37, LLC	SERC	United States
NCR11782	Innovative Solar 42, LLC	SERC	United States
NCR11624	Innovative Solar 46, LLC	SERC	United States
NCR00040	JEA	SERC	United States
NCR00041	Key West, City of (Keys Energy)	SERC	United States
NCR00042	Kissimmee Utility Authority	SERC	United States
NCR01114	Lafayette Utilities System	SERC	United States
NCR00043	Lake Worth, City of	SERC	United States
NCR00044	Lakeland Electric	SERC	United States
NCR00045	Lee County Electric Cooperative, Inc	SERC	United States
NCR01223	LG&E and KU Services Company as agent for Louisville Gas and Electric Company and Kentucky Utilities Company	SERC	United States
NCR01116	Louisiana Energy & Power Authority	SERC	United States
NCR01265	Louisiana Generating, LLC	SERC	United States
NCR10133	Luminant Energy Company LLC	SERC	United States
NCR11066	Memphis Light, Gas and Water Division	SERC	United States
NCR00167	Mid Georgia Cogen L.P.	SERC	United States
NCR00826	Midcontinent Independent System Operator, Inc.	SERC	United States
NCR03044	MISO-MBHydro Contingency Reserve Sharing Group	SERC	United States
NCR06050	Mississippi Delta Energy Agency	SERC	United States
NCR01273	Mississippi Power Company	SERC	United States

NCR Matrix (with Dates)

NCR11482	Mobile Energy L L C	SERC	United States
NCR11815	Moffett Solar 1, LLC	SERC	United States
NCR11596	MPC Generating, LLC	SERC	United States
NCR01278	Municipal Electric Authority of Georgia	SERC	United States
NCR01283	NAES Corporation - Holland	SERC	United States
NCR11846	NAES Corporation - Kings Mountain Energy Center	SERC	United States
NCR11932	NAES Corporation – Wansley #9	SERC	United States
NCR11077	Nashville Electric Service	SERC	United States
NCR11555	NC Renewable Power Lumberton LLC	SERC	United States
NCR09017	Nelson Industrial Steam Company	SERC	United States
NCR11700	New Creek Wind LLC	SERC	United States
NCR00052	New Smyrna Beach, Utilities Commission of	SERC	United States
NCR10019	NextEra Energy Resources, LLC	SERC	United States
NCR01279	North Carolina Electric Membership Corporation	SERC	United States
NCR11016	Northeast Louisiana Power Cooperative Inc.	SERC	United States
NCR10281	Northern Virginia Electric Cooperative	SERC	United States
NCR11914	NRG Cottonwood Tenant LLC	SERC	United States
NCR11584	NRG Energy Services LLC - Plum Point	SERC	United States
NCR09019	Occidental Chemical Corporation	SERC	United States
NCR01287	Oglethorpe Power Corporation	SERC	United States
NCR00859	Old Dominion Electric Cooperative	SERC	United States
NCR11895	Oleander Holdings, LLC	SERC	United States
NCR00057	Orlando Utilities Commission	SERC	United States
NCR01290	Owensboro, KY Municipal Utilities	SERC	United States
NCR03041	Paducah Power System	SERC	United States
NCR11720	Panda Stonewall LLC	SERC	United States
NCR11808	Pattern Operators LP	SERC	United States
NCR09008	Performance Materials NA, Inc.	SERC	United States
NCR11805	PIC Group, Inc. – South Boston Energy, LLC	SERC	United States
NCR01292	Piedmont Electric Membership Corporation	SERC	United States
NCR11477	Piedmont Green Power, LLC	SERC	United States
NCR11183	Pioneer Trail Wind Farm, LLC	SERC	United States
NCR00879	PJM Interconnection, LLC	SERC	United States
NCR10385	Plum Point Energy Associates (PPEA), LLC - GO	SERC	United States
NCR01137	Poplar Bluff	SERC	United States
NCR10203	PowerSouth Energy Cooperative	SERC	United States
NCR09035	Prairie Power, Inc.	SERC	United States
NCR11175	Prairie State Generating Company	SERC	United States
NCR11002	Princeton Electric Plant Board	SERC	United States
NCR01139	Public Service Commission Of Yazoo City	SERC	United States
NCR00065	Reedy Creek Improvement District	SERC	United States
NCR01305	Sabine River Authority of TX/LA	SERC	United States
NCR11483	Santa Rosa Energy Center, LLC	SERC	United States
NCR00068	Seminole Electric Cooperative	SERC	United States
NCR11135	Settlers Trail Wind Farm LLC	SERC	United States
NCR11629	Shelby County Energy Center, LLC	SERC	United States
NCR01142	Sikeston Board Of Municipal Utilities	SERC	United States
NCR11305	Smoky Mountain Transmission LLC	SERC	United States
NCR11685	SOLV, Inc.	SERC	United States
NCR11367	South Boston Energy LLC	SERC	United States
NCR01312	South Carolina Public Service Authority	SERC	United States
NCR11816	Southampton Solar, LLC	SERC	United States

NCR Matrix (with Dates)

NCR00070	Southeastern Power Administration	SERC	United States
NCR01319	Southern Company Services, Inc. - Gen	SERC	United States
NCR01320	Southern Company Services, Inc. - Trans	SERC	United States
NCR01321	Southern Illinois Power Cooperative	SERC	United States
NCR01322	Southern Power Company	SERC	United States
NCR10328	Southwest Louisiana Electric Membership Corporation	SERC	United States
NCR01324	Southwestern Electric Cooperative, Inc.	SERC	United States
NCR01325	SOWEGA Power LLC	SERC	United States
NCR01329	Spruance Genco, LLC	SERC	United States
NCR01330	Spruance Operating Services, LLC	SERC	United States
NCR11896	Stanton Clean Energy, LLC	SERC	United States
NCR11834	Summit Farms Solar, LLC	SERC	United States
NCR00073	Tallahassee, City of	SERC	United States
NCR00074	Tampa Electric Company	SERC	United States
NCR03043	TEE Contingency Reserve Sharing Group	SERC	United States
NCR01334	Tenaska Alabama II Partners, L.P.	SERC	United States
NCR01335	Tenaska Alabama Partners, L.P.	SERC	United States
NCR00632	Tenaska Frontier Partners, Ltd	SERC	United States
NCR01337	Tenaska Georgia Partners, L.P.	SERC	United States
NCR01339	Tenaska Virginia Partners, L.P.	SERC	United States
NCR01151	Tennessee Valley Authority	SERC	United States
NCR01152	Terrebonne Parish Consolidated Government	SERC	United States
NCR09037	The Dow Chemical Company	SERC	United States
NCR11014	Tilton Energy, LLC	SERC	United States
NCR01348	Town of Sharpsburg	SERC	United States
NCR01349	Town of Stantonburg	SERC	United States
NCR01350	Town of Waynesville	SERC	United States
NCR01356	USACE - Charleston District	SERC	United States
NCR11109	USACE - Fort Worth District	SERC	United States
NCR01359	USACE - Mobile District	SERC	United States
NCR01360	USACE - Nashville District	SERC	United States
NCR01361	USACE - Savannah District	SERC	United States
NCR01364	USACE - Wilmington District	SERC	United States
NCR01365	VACAR South	SERC	United States
NCR00078	Vandolah Power Company, LLC	SERC	United States
NCR01214	Virginia Electric and Power Company (DP, TO)	SERC	United States
NCR09006	Virginia Electric and Power Company - Nuclear (GO,GOP)	SERC	United States
NCR09028	Virginia Electric and Power Company - Power Generation	SERC	United States
NCR00200	Vistra Energy Corp.	SERC	United States
NCR00940	Wabash Valley Power Association, Inc.	SERC	United States
NCR01314	Walton Bainbridge Power Facility	SERC	United States
NCR11598	Walton County Power, LLC	SERC	United States
NCR01313	Walton Discover Power Facility	SERC	United States
NCR11599	Washington County Power, LLC	SERC	United States
NCR11625	WestRock Southeast, LLC	SERC	United States
NCR00081	Winter Park, City of	SERC	United States
NCR10001	Air Liquide Large Industries U.S., LP	Texas RE	United States
NCR11641	Alamo 6, LLC	Texas RE	United States
NCR11785	Algonquin Power Co.	Texas RE	United States
NCR04006	American Electric Power Service Corp as agent for AEP Texas Inc. and Public Service Company of Oklahoma	Texas RE	United States
NCR11265	Anacacho Wind Farm, LLC	Texas RE	United States

NCR Matrix (with Dates)

NCR11746	Astra Wind, LLC	Texas RE	United States
NCR10259	Avangrid Renewables	Texas RE	United States
NCR04008	Bandera Electric Cooperative, Inc.	Texas RE	United States
NCR04009	Barney Davis, LLC	Texas RE	United States
NCR04010	Barney M Davis Unit 1	Texas RE	United States
NCR04011	BASF Corp	Texas RE	United States
NCR04012	Bastrop Energy Partners, LP	Texas RE	United States
NCR11814	Bearkat Wind Energy I, LLC	Texas RE	United States
NCR11809	Big Country Electric Cooperative, Inc	Texas RE	United States
NCR04013	Bluebonnet Electric Co Op, Inc.	Texas RE	United States
NCR11320	Bobcat Bluff Wind Project, LLC	Texas RE	United States
NCR04015	Brazos Electric Power Co Op, Inc.	Texas RE	United States
NCR10210	Brazos Wind, LP	Texas RE	United States
NCR11576	Briscoe Wind Farm, LLC	Texas RE	United States
NCR04018	Brownsville Public Utilities Board	Texas RE	United States
NCR04021	Brownsville Public Utilities Board Silas Ray	Texas RE	United States
NCR11799	Bruening's Breeze Wind Farm, LLC	Texas RE	United States
NCR04022	Bryan Texas Utilities	Texas RE	United States
NCR04025	Buffalo Gap Wind Farm, LLC	Texas RE	United States
NCR10290	Bull Creek Wind, LLC	Texas RE	United States
NCR00006	Calpine Corporation	Texas RE	United States
NCR11591	Cameron Wind I, LLC	Texas RE	United States
NCR11944	Canadian Breaks LLC	Texas RE	United States
NCR04028	CenterPoint Energy Houston Electric, LLC	Texas RE	United States
NCR10175	Central Texas Electric Cooperative, Inc.	Texas RE	United States
NCR11807	Chamon Power LLC	Texas RE	United States
NCR10173	Champion Wind Farm, LLC	Texas RE	United States
NCR11763	Chapman Ranch Wind I, LLC	Texas RE	United States
NCR04029	City of Austin dba Austin Energy	Texas RE	United States
NCR04030	City of Austin dba Austin Energy	Texas RE	United States
NCR04032	City of College Station	Texas RE	United States
NCR04033	City of Garland	Texas RE	United States
NCR04034	City of Garland	Texas RE	United States
NCR04035	City of Garland	Texas RE	United States
NCR10004	City of Georgetown	Texas RE	United States
NCR10189	City of San Marcos	Texas RE	United States
NCR00769	Clearway Energy Operating, LLC	Texas RE	United States
NCR11829	Clearway Renew LLC	Texas RE	United States
NCR11926	Clearway Renewable Operation & Maintenance LLC	Texas RE	United States
NCR11627	Colbeck's Corner, LLC	Texas RE	United States
NCR11804	Coleman County Electric Cooperative, Inc.	Texas RE	United States
NCR11862	Colorado Bend I Power, LLC	Texas RE	United States
NCR11790	Concho Valley Electric Cooperative, Inc.	Texas RE	United States
NCR11605	Consolidated Edison Development, Inc.	Texas RE	United States
NCR11735	Cotton Plains Wind I, LLC	Texas RE	United States
NCR04037	CPS Energy	Texas RE	United States
NCR11114	Cross Texas Transmission, LLC	Texas RE	United States
NCR04049	Denton Municipal Electric	Texas RE	United States
NCR11750	Dermott Wind, LLC	Texas RE	United States
NCR04050	Desert Sky Wind Farm, LP	Texas RE	United States
NCR04051	Direct Energy, LP	Texas RE	United States
NCR11032	Duke Energy Renewables Services, LLC	Texas RE	United States

NCR Matrix (with Dates)

NCR01227	East Texas Electric Cooperative Inc.	Texas RE	United States
NCR11556	Ector County Energy Center LLC	Texas RE	United States
NCR00551	EDF Energy Services, LLC	Texas RE	United States
NCR11441	EDF Renewable Service	Texas RE	United States
NCR11662	EDP Renewables North America LLC	Texas RE	United States
NCR11430	EIF Channelview Cogeneration, LLC	Texas RE	United States
NCR11698	Electra Wind, LLC	Texas RE	United States
NCR04056	Electric Reliability Council of Texas, Inc.	Texas RE	United States
NCR10211	Electric Transmission Texas, LLC	Texas RE	United States
NCR04055	Equistar Chemical, LP	Texas RE	United States
NCR04057	Exelon Generation Company, LLC	Texas RE	United States
NCR04058	Exxonmobil Refining and Supply Company	Texas RE	United States
NCR11933	First Solar Electric - Phoebe, LLC	Texas RE	United States
NCR11726	First Solar Electric-East Pecos, LLC	Texas RE	United States
NCR11884	First Solar Electric-Lamesa 2, LLC	Texas RE	United States
NCR11889	First Solar Electric-Midway 1, LLC	Texas RE	United States
NCR11824	Flat Top Wind I, LLC	Texas RE	United States
NCR10262	Floresville Electric Light & Power System	Texas RE	United States
NCR11930	Fluvanna Wind Energy 2 LLC	Texas RE	United States
NCR11769	Fluvanna Wind Energy LLC	Texas RE	United States
NCR11950	Foard City Wind, LLC	Texas RE	United States
NCR04003	Forest Creek Wind Farm, LLC	Texas RE	United States
NCR04059	Formosa Utility Venture, Ltd.	Texas RE	United States
NCR11855	Friendswood Energy Genco LLC	Texas RE	United States
NCR04074	GEN TEX Power Corp	Texas RE	United States
NCR04075	GEUS	Texas RE	United States
NCR04076	GEUS	Texas RE	United States
NCR10020	Golden Spread Electric Cooperative, Inc.	Texas RE	United States
NCR11364	Goldthwaite Wind Energy LLC	Texas RE	United States
NCR11491	Grandview Wind Farm, LLC	Texas RE	United States
NCR11510	Green Pastures Wind I, LLC.	Texas RE	United States
NCR11573	Green Pastures Wind II, LLC	Texas RE	United States
NCR04079	Guadalupe Valley Electric Co Op Inc.	Texas RE	United States
NCR11631	Gunsight Mountain Wind Energy LLC	Texas RE	United States
NCR00210	Hackberry Wind, LLC	Texas RE	United States
NCR11690	Horse Creek Wind, LLC	Texas RE	United States
NCR00379	Inadale Wind Farm, LLC	Texas RE	United States
NCR04082	Ingleside Cogeneration, LP	Texas RE	United States
NCR11392	International Boundary and Water Commission, US Section	Texas RE	United States
NCR11694	Invenergy Services LLC	Texas RE	United States
NCR00166	Jackson Electric Cooperative, Inc.	Texas RE	United States
NCR10178	Karnes Electric Cooperative, Inc.	Texas RE	United States
NCR11497	Keechi Wind, LLC	Texas RE	United States
NCR10179	Kerrville Public Utility Board	Texas RE	United States
NCR04088	Kiowa Power Partners, LLC	Texas RE	United States
NCR11817	Lamar County Electric Cooperative Association	Texas RE	United States
NCR11885	Lamesa II Solar, LLC	Texas RE	United States
NCR11863	LaPorte Power, LLC	Texas RE	United States
NCR04090	Laredo, LLC	Texas RE	United States
NCR04091	LCRA Transmission Services Corporation	Texas RE	United States
NCR11897	Live Oak Wind Project, LLC	Texas RE	United States
NCR11931	Lockett Windfarm, LLC	Texas RE	United States

NCR Matrix (with Dates)

NCR11076	Lone Star Transmission, LLC	Texas RE	United States
NCR11503	Longhorn Wind Project, LLC	Texas RE	United States
NCR11075	Loraine Windpark Project, LLC	Texas RE	United States
NCR11267	Los Vientos Windpower IA, LLC	Texas RE	United States
NCR11266	Los Vientos Windpower IB, LLC	Texas RE	United States
NCR11538	Los Vientos Windpower III, LLC	Texas RE	United States
NCR11635	Los Vientos Windpower IV, LLC	Texas RE	United States
NCR11603	Los Vientos Windpower V, LLC	Texas RE	United States
NCR04092	Lower Colorado River Authority	Texas RE	United States
NCR04093	Lower Colorado River Authority	Texas RE	United States
NCR10133	Luminant Energy Company LLC	Texas RE	United States
NCR10219	Luminant Generation Company, LLC	Texas RE	United States
NCR11798	Lyntegar Electric Cooperative, Inc.	Texas RE	United States
NCR04094	Magic Valley Electric Coop Inc.	Texas RE	United States
NCR11242	Magic Valley Wind Farm I, LLC	Texas RE	United States
NCR11493	Major Oak Power, LLC	Texas RE	United States
NCR11701	Mariah del Norte LLC	Texas RE	United States
NCR11636	MaxGen Energy Services	Texas RE	United States
NCR00087	McAdoo Wind Energy, LLC	Texas RE	United States
NCR10246	Medina Electric Cooperative, Inc.	Texas RE	United States
NCR11511	Mesquite Creek Wind LLC	Texas RE	United States
NCR11478	Miami Wind I, LLC	Texas RE	United States
NCR11888	Midway Solar 1, LLC	Texas RE	United States
NCR11894	Midway Wind, LLC	Texas RE	United States
NCR11864	Mountain Creek Power, LLC	Texas RE	United States
NCR11935	NAES Corporation - Nacogdoches	Texas RE	United States
NCR11508	NAES Corporation - Quail Run Energy Center	Texas RE	United States
NCR11181	NAES Corporation-Sandy Creek Energy Station	Texas RE	United States
NCR04101	New Braunfels Utilities	Texas RE	United States
NCR10019	NextEra Energy Resources, LLC	Texas RE	United States
NCR10276	Notrees Windpower, LP	Texas RE	United States
NCR10326	NRG Cedar Bayou Development Co, LLC	Texas RE	United States
NCR11642	NRG Energy Services - Golden Spread	Texas RE	United States
NCR10090	NRG Texas Power, LLC	Texas RE	United States
NCR04106	Nueces Bay, LLC	Texas RE	United States
NCR10180	Nueces Electric Cooperative, Inc.	Texas RE	United States
NCR11736	Old Settler Wind, LLC	Texas RE	United States
NCR04109	Oncor Electric Delivery Company LLC	Texas RE	United States
NCR10072	Optim Energy Altura Cogen, LLC	Texas RE	United States
NCR04110	Oxy Vinyls LP	Texas RE	United States
NCR11470	Panda Sherman Power, LLC	Texas RE	United States
NCR11872	Panda Temple Power II, LLC	Texas RE	United States
NCR10249	Panther Creek Wind Farm I & II, LLC	Texas RE	United States
NCR10334	Panther Creek Wind Farm Three, LLC	Texas RE	United States
NCR10335	Papalote Creek I, LLC	Texas RE	United States
NCR11033	Papalote Creek II, LLC	Texas RE	United States
NCR04138	Paris Generation, LP	Texas RE	United States
NCR11808	Pattern Operators LP	Texas RE	United States
NCR04111	Pedernales Elec Co Op Inc.	Texas RE	United States
NCR11346	Petra Nova Power I LLC	Texas RE	United States
NCR11934	Phoebe Energy Project, LLC	Texas RE	United States
NCR11868	PHR Holdings LLC	Texas RE	United States

NCR Matrix (with Dates)

NCR11765	Port Comfort Power LLC	Texas RE	United States
NCR04112	Power Resources LTD	Texas RE	United States
NCR00338	Pyron Wind Farm, LLC	Texas RE	United States
NCR11525	Quail Run Energy Partners, LP	Texas RE	United States
NCR11947	Ranchero Wind Farm, LLC	Texas RE	United States
NCR11838	Rattlesnake Power, LLC	Texas RE	United States
NCR11547	Rattlesnake Wind I LLC	Texas RE	United States
NCR04113	Rayburn Country Electric Cooperative, Inc.	Texas RE	United States
NCR11725	RES Americas Wind Operations, Inc.	Texas RE	United States
NCR11924	Rio Bravo Windpower, LLC	Texas RE	United States
NCR03038	Rio Grande Electric Co Op	Texas RE	United States
NCR11774	Rocksprings Val Verde Wind LLC	Texas RE	United States
NCR10174	Roscoe Wind Farm, LLC	Texas RE	United States
NCR11544	Route 66 Wind Power, LLC	Texas RE	United States
NCR11383	RWE Renewables QSE, LLC	Texas RE	United States
NCR04118	San Bernard Electric Coop, Inc.	Texas RE	United States
NCR00253	San Miguel Electric Cooperative, Inc.	Texas RE	United States
NCR11646	San Roman Wind I, LLC	Texas RE	United States
NCR04004	Sand Bluff Wind Farm LLC	Texas RE	United States
NCR11182	Sandy Creek Services, LLC	Texas RE	United States
NCR11918	Santa Rita East Wind Energy LLC	Texas RE	United States
NCR11841	Santa Rita Wind Energy LLC	Texas RE	United States
NCR10321	Scurry County Wind II, LLC	Texas RE	United States
NCR10027	Scurry County Wind, LP	Texas RE	United States
NCR11566	Shannon Wind, LLC	Texas RE	United States
NCR04119	Sharyland Utilities, L.L.C.	Texas RE	United States
NCR10261	Sherbino I Wind Farm, LLC	Texas RE	United States
NCR11206	Sherbino II Wind Farm LLC	Texas RE	United States
NCR11202	Signal Hill Generating LLC	Texas RE	United States
NCR11310	South Houston Green Power, LLC	Texas RE	United States
NCR11620	South Plains Wind Energy II, LLC	Texas RE	United States
NCR11579	South Plains Wind Energy, LLC	Texas RE	United States
NCR04124	South Texas Electric Cooperative, Inc.	Texas RE	United States
NCR11221	Southern Power Company	Texas RE	United States
NCR11789	Southwest Texas Electric Cooperative, Inc.	Texas RE	United States
NCR11575	Spinning Spur Wind Three, LLC	Texas RE	United States
NCR11464	Spinning Spur Wind Two	Texas RE	United States
NCR10224	Stanton Wind Energy, LLC	Texas RE	United States
NCR11887	Stella Wind Farm, LLC	Texas RE	United States
NCR11507	Stephens Ranch Wind Energy	Texas RE	United States
NCR04127	STP Nuclear Operating Company	Texas RE	United States
NCR10183	Sweeny Cogeneration LLC	Texas RE	United States
NCR04132	Sweetwater Wind 2, LLC	Texas RE	United States
NCR04133	Sweetwater Wind 3 LLC	Texas RE	United States
NCR04135	Sweetwater Wind 4 LLC	Texas RE	United States
NCR02715	Sweetwater Wind 5, LLC	Texas RE	United States
NCR11891	Tahoka Wind, LLC	Texas RE	United States
NCR11384	Taylor Electric Cooperative, Inc.	Texas RE	United States
NCR11462	Temple Generation I, LLC	Texas RE	United States
NCR04136	Tenaska Frontier Partners LTD	Texas RE	United States
NCR04137	Tenaska Gateway Partners LTD	Texas RE	United States
NCR11116	Texas Medical Center Central Heating and Cooling Services Corp	Texas RE	United States

NCR Matrix (with Dates)

NCR04141	Texas Municipal Power Agency	Texas RE	United States
NCR11456	Texas Municipal Power Agency	Texas RE	United States
NCR04143	Texas-New Mexico Power Co	Texas RE	United States
NCR04148	Trent Wind Farm LP	Texas RE	United States
NCR11205	Trinity Hills Wind Farm LLC	Texas RE	United States
NCR10277	Turkey Track Wind Energy Center	Texas RE	United States
NCR11495	TX Hereford Wind, LLC	Texas RE	United States
NCR11519	TX Jumbo Road Wind, LLC	Texas RE	United States
NCR04156	USACE - Tulsa District	Texas RE	United States
NCR10181	Victoria Electric Cooperative, INC.	Texas RE	United States
NCR11948	Victoria Port Power, LLC	Texas RE	United States
NCR04159	Victoria WLE LP	Texas RE	United States
NCR04160	Weatherford Municipal Utility System	Texas RE	United States
NCR01160	Western Farmers Electric Cooperative	Texas RE	United States
NCR11784	Willow Springs Windfarm, LLC	Texas RE	United States
NCR11074	Wind Energy Transmission Texas, LLC	Texas RE	United States
NCR11865	Wolf Hollow I Power, LLC	Texas RE	United States
NCR11506	Worley - Channelview Cogeneration	Texas RE	United States
NCR11826	54KR 8ME LLC	WECC	United States
NCR11634	62SK 8ME LLC	WECC	United States
NCR11643	63SU 8ME LLC	WECC	United States
NCR11921	64KT 8ME LLC	WECC	United States
NCR11645	AE Power Services LLC	WECC	United States
NCR05002	AES Alamitos, LLC	WECC	United States
NCR05004	AES Huntington Beach, LLC	WECC	United States
NCR05007	AES Redondo Beach LLC	WECC	United States
NCR11209	Agua Caliente Solar LLC	WECC	United States
NCR10042	Alameda Municipal Power	WECC	United States
NCR11785	Algonquin Power Co.	WECC	United States
NCR11258	Alta Wind VIII, LLC	WECC	United States
NCR11528	AltaGas Brush Energy Inc.	WECC	United States
NCR05363	AltaGas Ripon Energy Inc.	WECC	United States
NCR05014	Aragonne Wind LLC	WECC	United States
NCR05015	Arizona Electric Power Cooperative, Inc.	WECC	United States
NCR05016	Arizona Public Service Company	WECC	United States
NCR11426	Arlington Valley Solar Energy II, LLC	WECC	United States
NCR03051	Arlington Valley, LLC	WECC	United States
NCR03049	Arlington Valley, LLC - AVBA	WECC	United States
NCR11452	ASI Operations Inc	WECC	United States
NCR10259	Avangrid Renewables	WECC	United States
NCR05020	Avista Corporation	WECC	United States
NCR11118	Balancing Authority of Northern California	WECC	United States
NCR11411	Barrick Goldstrike Mines Inc.	WECC	United States
NCR05023	Basin Electric Power Cooperative	WECC	United States
NCR10194	BIV Generation Company, LLC	WECC	United States
NCR05030	Black Hills Corporation	WECC	United States
NCR11433	Blythe Energy Inc.	WECC	United States
NCR00086	Boise-Kuna Irrigation District	WECC	United States
NCR05032	Bonneville Power Administration	WECC	United States
NCR11676	Boulder Solar Power, LLC	WECC	United States
NCR05033	Bountiful City Light & Power	WECC	United States
NCR05039	Burney Forest Products, A Joint Venture	WECC	United States

NCR Matrix (with Dates)

NCR11170	Caithness Shepherds Flat, LLC	WECC	United States
NCR05047	California Department of Water Resources	WECC	United States
NCR11801	California Flats Solar, LLC	WECC	United States
NCR05048	California Independent System Operator	WECC	United States
NCR05053	CalPeak Power Panoche LLC	WECC	United States
NCR11940	Calpeak Power Panoche LLC	WECC	United States
NCR05054	CalPeak Power Vaca-Dixon LLC	WECC	United States
NCR11941	CalPeak Power Vaca-Dixon, LLC	WECC	United States
NCR11439	CalPECo	WECC	United States
NCR00006	Calpine Corporation	WECC	United States
NCR11626	CAMS - Garnet Valley	WECC	United States
NCR11680	Catalina Solar 2, LLC	WECC	United States
NCR11484	Catalina Solar, LLC	WECC	United States
NCR11775	CD Global Solar NC Sponsor, L.P.	WECC	United States
NCR11161	Cedar Creek II, LLC	WECC	United States
NCR10165	Cedar Creek Wind Energy, LLC	WECC	United States
NCR11271	Cedar Point Wind, LLC	WECC	United States
NCR11431	Centinela Solar Energy, LLC	WECC	United States
NCR05067	City of Anaheim	WECC	United States
NCR05069	City of Azusa	WECC	United States
NCR05072	City of Burbank	WECC	United States
NCR05074	City of Colton	WECC	United States
NCR05079	City of Fort Collins	WECC	United States
NCR05489	City of Gallup	WECC	United States
NCR05081	City of Glendale	WECC	United States
NCR05084	City of Idaho Falls Electric Light Division	WECC	United States
NCR05086	City of Longmont	WECC	United States
NCR05087	City of Loveland, Colorado	WECC	United States
NCR05089	City of Palo Alto	WECC	United States
NCR05090	City of Pasadena Water and Power	WECC	United States
NCR05091	City of Redding	WECC	United States
NCR05093	City of Riverside Public Utilities	WECC	United States
NCR05094	City of Roseville	WECC	United States
NCR11025	City of Spokane Waste-to-Energy Facility	WECC	United States
NCR05096	City of St George	WECC	United States
NCR05097	City of Tacoma, Department of Public Utilities, Light Division	WECC	United States
NCR05494	City of Ukiah	WECC	United States
NCR11883	Clearway Energy Operating LLC - Fossil	WECC	United States
NCR00769	Clearway Energy Operating, LLC	WECC	United States
NCR11829	Clearway Renew LLC	WECC	United States
NCR11926	Clearway Renewable Operation & Maintenance LLC	WECC	United States
NCR10311	Colorado Energy Management - BCP	WECC	United States
NCR00254	Colorado Energy Management - BIV	WECC	United States
NCR00296	Colorado Energy Management - CPP	WECC	United States
NCR10378	Colorado Energy Management - MPC	WECC	United States
NCR00339	Colorado Energy Management - RMP	WECC	United States
NCR11389	Colorado Highlands Wind, LLC	WECC	United States
NCR10195	Colorado Power Partners	WECC	United States
NCR05106	Colorado Springs Utilities	WECC	United States
NCR05107	Colstrip Energy Limited Partnership	WECC	United States
NCR10043	Columbia Basin Hydropower	WECC	United States
NCR11665	Comanche Solar PV, LLC	WECC	United States

NCR Matrix (with Dates)

NCR11605	Consolidated Edison Development, Inc.	WECC	United States
NCR05115	Continental Divide Electric Cooperative	WECC	United States
NCR11290	Copper Mountain Solar 2, LLC	WECC	United States
NCR11476	Copper Mountain Solar 3, LLC	WECC	United States
NCR11666	Copper Mountain Solar 4, LLC	WECC	United States
NCR05119	Coso Energy Developers	WECC	United States
NCR05120	Coso Finance Partners	WECC	United States
NCR05122	Coso Power Developers	WECC	United States
NCR05123	Cowlitz County PUD No. 1	WECC	United States
NCR05124	Crockett Cogeneration, a California Limited Partnership	WECC	United States
NCR11359	CSolar IV South, LLC	WECC	United States
NCR11572	CSolar IV West, LLC	WECC	United States
NCR11922	CXA La Paloma, LLC	WECC	United States
NCR05169	CXA Sundevil Holdco, Inc.	WECC	United States
NCR05126	Deseret Generation & Transmission Co-operative	WECC	United States
NCR00125	DGC Operations, LLC	WECC	United States
NCR11633	Dominion Solar Projects III, Inc.	WECC	United States
NCR10264	Duke Energy Renewables Services, LLC	WECC	United States
NCR11757	EDF RAH - Playa Solar, LLC	WECC	United States
NCR11441	EDF Renewable Service	WECC	United States
NCR11662	EDP Renewables North America LLC	WECC	United States
NCR05140	El Paso Electric Company	WECC	United States
NCR05143	Elk Hills Power, LLC	WECC	United States
NCR11531	Energia Sierra Juarez, S. de R.L. de C.V.	WECC	United States
NCR11568	Energy Keepers Incorporated	WECC	United States
NCR00209	Energy Northwest - Columbia	WECC	United States
NCR00250	Energy Northwest - Energy/Business Services	WECC	United States
NCR05232	Equilon Enterprises, LLC	WECC	United States
NCR05153	Eugene Water & Electric Board	WECC	United States
NCR11325	Exelon Generation Co. LLC	WECC	United States
NCR05154	Fall River Rural Electric/PNGC	WECC	United States
NCR05155	Farmington Electric Utility System	WECC	United States
NCR11326	First Solar Electric - AVSR1, LLC	WECC	United States
NCR11902	First Solar Electric - California Flats S, LLC	WECC	United States
NCR11394	First Solar Electric - CVS, LLC	WECC	United States
NCR11361	First Solar Electric - DSL, LLC	WECC	United States
NCR11358	First Solar Electric - ISECS, LLC	WECC	United States
NCR11758	First Solar Electric - Playa, LLC	WECC	United States
NCR11903	First Solar Electric - Techren Solar I, LLC	WECC	United States
NCR11343	First Solar Electric - TPZ, LLC	WECC	United States
NCR11907	First Solar Electric - Willow Springs LLC	WECC	United States
NCR11857	First Solar Electric – Mount Signal 3, LLC	WECC	United States
NCR11673	First Solar Electric-Astoria I, LLC	WECC	United States
NCR11677	First Solar Electric-Astoria II, LLC	WECC	United States
NCR11776	First Solar Electric-Beacon, LLC	WECC	United States
NCR11802	First Solar Electric-CA Flats N, LLC	WECC	United States
NCR11571	First Solar Electric-ISECSW, LLC	WECC	United States
NCR11609	First Solar Electric-Red Hills, LLC	WECC	United States
NCR11612	First Solar Electric-Stateline, LLC	WECC	United States
NCR05162	Fountain Valley Power, LLC	WECC	United States
NCR05164	Frederickson Power LP	WECC	United States
NCR11149	GenOn Energy Inc.	WECC	United States

NCR Matrix (with Dates)

NCR11372	Gila Bend Operations Company	WECC	United States
NCR05171	Glacier Electric Cooperative, Inc.	WECC	United States
NCR11703	Golden Fields Solar I, LLC	WECC	United States
NCR11089	Goshen Phase II LLC	WECC	United States
NCR05172	Grays Harbor County PUD	WECC	United States
NCR02551	Grays Harbor Energy LLC	WECC	United States
NCR11806	Great Valley Solar Portfolio Holdings, LLC	WECC	United States
NCR11393	Gridforce Energy Management, LLC	WECC	United States
NCR11783	GridLiance Holdco, LP	WECC	United States
NCR03050	Griffith Energy, LLC	WECC	United States
NCR03052	Griffith Energy, LLC - GRGO	WECC	United States
NCR05177	Harbor Cogeneration Company, LLC	WECC	United States
NCR05181	Hermiston Generating Co., L.P.	WECC	United States
NCR05182	Hetch Hetchy Water and Power	WECC	United States
NCR05184	High Desert Power Project, LLC	WECC	United States
NCR11304	High Plains Ranch II LLC	WECC	United States
NCR11744	Hill County Electric Cooperative, Inc.	WECC	United States
NCR05190	Holy Cross Energy	WECC	United States
NCR11443	Hudson Ranch Power I	WECC	United States
NCR05191	Idaho Power Company	WECC	United States
NCR11103	Idaho Wind Partners 1, LLC	WECC	United States
NCR05195	Imperial Irrigation District	WECC	United States
NCR11427	Imperial Valley Solar 1, LLC	WECC	United States
NCR11858	Imperial Valley Solar 3, LLC	WECC	United States
NCR05197	Indigo Generation, LLC	WECC	United States
NCR10267	Inland Empire Energy Center LLC	WECC	United States
NCR11226	Intermountain Rural Electric Association	WECC	United States
NCR11421	Ivanpah Master Holdings LLC	WECC	United States
NCR05503	Judith Gap Energy LLC	WECC	United States
NCR05204	Kern River Cogeneration Company	WECC	United States
NCR05504	KES-Kingsburg, LP	WECC	United States
NCR05505	Kings River Conservation District	WECC	United States
NCR05206	Klickitat County PUD	WECC	United States
NCR05507	La Plata Electric Association, Inc.	WECC	United States
NCR05213	Larkspur Energy, LLC	WECC	United States
NCR05216	Lassen Municipal Utility District	WECC	United States
NCR05223	Los Angeles Department of Water and Power	WECC	United States
NCR11467	Los Angeles Department of Water and Power - APEX	WECC	United States
NCR05225	Lower Valley Energy	WECC	United States
NCR10133	Luminant Energy Company LLC	WECC	United States
NCR11849	Luz Solar Partners Ltd. IX	WECC	United States
NCR11850	Luz Solar Partners Ltd. VIII	WECC	United States
NCR05229	Malacha Hydro Limited Partnership GOP	WECC	United States
NCR11942	Malaga Power, LLC	WECC	United States
NCR11542	Malaga Power, LLC	WECC	United States
NCR05231	Manchief Power Company LLC	WECC	United States
NCR11256	Mariposa Energy, LLC	WECC	United States
NCR11360	MATL LLP	WECC	United States
NCR11636	MaxGen Energy Services	WECC	United States
NCR11303	Meadow Creek Project Company LLC	WECC	United States
NCR05234	Merced Irrigation District	WECC	United States
NCR05235	Mesquite Power LLC	WECC	United States

NCR Matrix (with Dates)

NCR11273	Mesquite Solar 1, LLC	WECC	United States
NCR11672	Mesquite Solar 2, LLC	WECC	United States
NCR11661	Mesquite Solar 3, LLC	WECC	United States
NCR05236	Metropolitan Water District of Southern California	WECC	United States
NCR10323	Midway Peaking, LLC	WECC	United States
NCR11943	Midway Peaking, LLC	WECC	United States
NCR11803	Midway Solar Farm II	WECC	United States
NCR05510	Midway Sunset Cogeneration Company	WECC	United States
NCR10394	Milford Wind Corridor Phase I, LLC	WECC	United States
NCR11697	Moapa Southern Paiute Solar, LLC	WECC	United States
NCR05244	Modesto Irrigation District	WECC	United States
NCR11463	Mojave 16/17/18, LLC	WECC	United States
NCR11653	Mojave 3/4/5	WECC	United States
NCR01015	Montana-Dakota Utilities Company	WECC	United States
NCR11328	Mountain Air Projects, LLC	WECC	United States
NCR11912	MRP - San Joaquin Energy, LLC	WECC	United States
NCR05254	Mt. Poso Cogeneration Co.	WECC	United States
NCR05256	Municipal Energy Agency of Nebraska	WECC	United States
NCR05257	Murray City Corporation	WECC	United States
NCR11261	Mustang Hills, LLC	WECC	United States
NCR11518	NAES - Panoche	WECC	United States
NCR11936	NAES CalPeak Panoche	WECC	United States
NCR11937	NAES CalPeak Power Vaca-Dixon	WECC	United States
NCR11306	NAES Corporation - Ferndale	WECC	United States
NCR11104	NAES Corporation - Harvest Wind Project	WECC	United States
NCR11632	NAES Corporation - High Desert Power Project	WECC	United States
NCR11929	NAES Corporation - Kern River	WECC	United States
NCR11589	NAES Corporation - Plains End	WECC	United States
NCR11590	NAES Corporation - Rathdrum Power	WECC	United States
NCR11830	NAES Corporation - Sunnyside Cogeneration	WECC	United States
NCR11928	NAES Corporation - Sycamore	WECC	United States
NCR00418	NAES Corporation - White Creek Wind 1	WECC	United States
NCR11938	NAES Malaga Power	WECC	United States
NCR11939	NAES Midway Peaking	WECC	United States
NCR11913	NAES San Joaquin	WECC	United States
NCR05515	National Nuclear Security Administration - Los Alamos National Laboratory	WECC	United States
NCR10260	National Nuclear Security Administration and Sandia National Laboratories -	WECC	United States
NCR00257	NaturEner Power Watch, LLC	WECC	United States
NCR10395	NaturEner Power Watch, LLC (GWA)	WECC	United States
NCR11272	NaturEner Rim Rock Energy, LLC	WECC	United States
NCR11382	NaturEner Wind Watch, LLC	WECC	United States
NCR10044	Nevada Cogeneration Associates #1	WECC	United States
NCR11469	Nevada Irrigation District	WECC	United States
NCR05261	Nevada Power Company	WECC	United States
NCR11395	Nevada Solar One, LLC	WECC	United States
NCR05263	New Harquahala Generating Company, LLC	WECC	United States
NCR02552	New Harquahala Generating Company, LLC - HGBA	WECC	United States
NCR00377	Newmont Nevada Energy Investment, LLC	WECC	United States
NCR10019	NextEra Energy Resources, LLC	WECC	United States
NCR11927	North Rosamond Solar, LLC	WECC	United States

NCR Matrix (with Dates)

NCR05278	Northern California Power Agency	WECC	United States
NCR05280	Northern Wasco County People's Utility District	WECC	United States
NCR11667	NorthStar Energy Management, LLC	WECC	United States
NCR05281	Northwest Power Pool Reserve Sharing Group	WECC	United States
NCR05282	NorthWestern Corporation	WECC	United States
NCR11854	NRG Energy Services, LLC - Carlsbad	WECC	United States
NCR11148	NRG Energy Services, LLC - Walnut Creek	WECC	United States
NCR05141	NRG Energy Services, LLC – El Segundo	WECC	United States
NCR11150	NRG Energy Services, LLC – Marsh Landing	WECC	United States
NCR11920	Oper8minute, LLC	WECC	United States
NCR11352	Orange Grove Energy, L.P.	WECC	United States
NCR05287	Oregon Trail Electric Consumers Cooperative	WECC	United States
NCR11521	ORNI 39 LLC	WECC	United States
NCR11881	ORNI 41	WECC	United States
NCR11839	ORNI 43 LLC	WECC	United States
NCR11412	ORNI 47 LLC	WECC	United States
NCR10396	Otay Mesa Energy Center, LLC	WECC	United States
NCR05299	Pacific Gas and Electric Company	WECC	United States
NCR11442	Pacific Wind	WECC	United States
NCR11279	Pacific-Ultrapower Chinese Station	WECC	United States
NCR05304	PacifiCorp	WECC	United States
NCR11344	Palouse Wind, LLC	WECC	United States
NCR10347	Panoche Energy Center LLC	WECC	United States
NCR11644	Parrey, LLC	WECC	United States
NCR11808	Pattern Operators LP	WECC	United States
NCR10289	Peak Reliability	WECC	United States
NCR05315	Pend Oreille County Public Utility District No. 1	WECC	United States
NCR11595	PIC Group, Inc.- Tonopah	WECC	United States
NCR11347	Pinyon Pines Wind I, LLC	WECC	United States
NCR11350	Pinyon Pines Wind II, LLC	WECC	United States
NCR11652	Pio Pico Energy Center, LLC	WECC	United States
NCR11420	Placer County Water Agency	WECC	United States
NCR00082	Plains End II, LLC	WECC	United States
NCR05320	Plains End, LLC	WECC	United States
NCR05321	Platte River Power Authority	WECC	United States
NCR05322	Plumas-Sierra Rural Electric Cooperative	WECC	United States
NCR05325	Portland General Electric Company	WECC	United States
NCR11745	Powder River Energy Corporation	WECC	United States
NCR05332	Provo City Corporation	WECC	United States
NCR05521	Public Service Company of Colorado	WECC	United States
NCR05333	Public Service Company of New Mexico	WECC	United States
NCR05340	Public Utility District #1 of Lewis County	WECC	United States
NCR05337	Public Utility District No. 1 of Benton County	WECC	United States
NCR05338	Public Utility District No. 1 of Chelan County	WECC	United States
NCR05334	Public Utility District No. 1 of Clark County	WECC	United States
NCR05286	Public Utility District No. 1 of Okanogan County	WECC	United States
NCR05335	Public Utility District No. 1 of Snohomish County	WECC	United States
NCR05522	Public Utility District No. 1 of Whatcom County	WECC	United States
NCR05342	Public Utility District No. 2 of Grant County, Washington	WECC	United States
NCR05343	PUD No. 1 of Douglas County	WECC	United States
NCR05344	Puget Sound Energy, Inc.	WECC	United States
NCR05349	Rathdrum Power, LLC	WECC	United States

NCR Matrix (with Dates)

NCR11951	RE Mustang Holdings LLC	WECC	United States
NCR11956	RE Astoria 2 LLC	WECC	United States
NCR11955	RE Astoria LLC	WECC	United States
NCR11717	RE Kansas LLC	WECC	United States
NCR11630	Red Horse III, LLC	WECC	United States
NCR11578	Red Horse Wind 2, LLC	WECC	United States
NCR11277	Rio Bravo Fresno	WECC	United States
NCR11296	Rio Bravo Rocklin	WECC	United States
NCR11214	Rockland Wind Farm LLC	WECC	United States
NCR10197	Rocky Mountain Power, LLC	WECC	United States
NCR05366	Rocky Mountain Reserve Group	WECC	United States
NCR05367	Rosebud Operating Services, Inc.	WECC	United States
NCR11353	Russell City Energy Company, LLC	WECC	United States
NCR05368	Sacramento Municipal Utility District	WECC	United States
NCR05369	Saguaro Power Company, A Limited Partnership	WECC	United States
NCR05372	Salt River Project Agricultural Improvement and Power District	WECC	United States
NCR05376	San Carlos Irrigation Project	WECC	United States
NCR05377	San Diego Gas & Electric	WECC	United States
NCR05524	San Luis Valley Rural Electric Cooperative, Inc.	WECC	United States
NCR05382	Seattle City Light	WECC	United States
NCR11307	Sentinel Energy Center, LLC	WECC	United States
NCR11232	Shiloh III Wind Project, LLC.	WECC	United States
NCR11450	Shiloh IV Wind Project, LLC	WECC	United States
NCR10292	Shiloh Wind Project 2, LLC	WECC	United States
NCR05389	Sierra Pacific Industries	WECC	United States
NCR05390	Sierra Pacific Power Company	WECC	United States
NCR05392	Silicon Valley Power	WECC	United States
NCR11549	Solar Star California XIII, LLC	WECC	United States
NCR11424	Solar Star California XIX, LLC	WECC	United States
NCR11704	Solar Star California XLI, LLC	WECC	United States
NCR11432	Solar Star California XX, LLC	WECC	United States
NCR11685	SOLV, Inc.	WECC	United States
NCR11054	South Feather Power Project	WECC	United States
NCR05398	Southern California Edison Company	WECC	United States
NCR11396	Southern Power Company	WECC	United States
NCR01143	Southwest Power Pool, Inc.	WECC	United States
NCR05401	Southwest Reserve Sharing Group	WECC	United States
NCR11557	SPI Anderson 2	WECC	United States
NCR05529	Spindle Hill Energy LLC	WECC	United States
NCR11679	sPower Services, LLC	WECC	United States
NCR11529	Spring Canyon Energy LLC	WECC	United States
NCR11471	Sunrise Power Company, LLC	WECC	United States
NCR05029	SWG Colorado, LLC	WECC	United States
NCR05417	Sycamore Cogeneration Company	WECC	United States
NCR05329	Talen Montana, LLC	WECC	United States
NCR11904	Techren Solar I LLC	WECC	United States
NCR05420	Termoelectrica de Mexicali, S. de R.L. de C.V.	WECC	United States
NCR05043	Terra-Gen Dixie Valley, LLC	WECC	United States
NCR10345	Three Buttes Windpower LLC	WECC	United States
NCR11737	Three Peaks Power LLC	WECC	United States
NCR11594	Tonopah Solar Energy, LLC	WECC	United States
NCR11090	Top of the World	WECC	United States

NCR Matrix (with Dates)

NCR11342	Topaz Solar Farms LLC	WECC	United States
NCR03036	Trans Bay Cable LLC	WECC	United States
NCR05533	TransAlta Centralia Generation, LLC	WECC	United States
NCR11457	TransAlta Wyoming Wind LLC	WECC	United States
NCR05430	Transmission Agency of Northern California	WECC	United States
NCR05431	Tri-Dam Project of the Oakdale and South San Joaquin Irrigation Districts	WECC	United States
NCR10030	Tri-State Generation and Transmission Association, Inc. - Reliability	WECC	United States
NCR05434	Tucson Electric Power	WECC	United States
NCR05435	Turlock Irrigation District	WECC	United States
NCR05436	Umatilla Electric Cooperative Assoc.	WECC	United States
NCR05441	US Bureau of Reclamation	WECC	United States
NCR05442	US Department Of Energy Richland Operations Office	WECC	United States
NCR05444	US Navy, Naval Base Kitsap	WECC	United States
NCR05537	USACE - Omaha District	WECC	United States
NCR05538	USACE - Portland District	WECC	United States
NCR05539	USACE - Seattle District	WECC	United States
NCR05540	USACE - Walla Walla District	WECC	United States
NCR05445	Utah Associated Municipal Power Systems	WECC	United States
NCR05446	Utah Municipal Power Agency	WECC	United States
NCR11610	Utah Red Hills Renewable Park, LLC	WECC	United States
NCR10216	Valencia Power, LLC	WECC	United States
NCR05447	Valley Electric Association, Inc	WECC	United States
NCR11078	Vantage Wind Energy LLC	WECC	United States
NCR00200	Vistra Energy Corp.	WECC	United States
NCR11905	Voyager II	WECC	United States
NCR05454	Watson Cogeneration Company	WECC	United States
NCR05456	Wellhead Power Panoche, LLC	WECC	United States
NCR05457	Wellhead Services, Inc	WECC	United States
NCR05461	Western Area Power Administration - Desert Southwest Region	WECC	United States
NCR05464	Western Area Power Administration - Rocky Mountain Region	WECC	United States
NCR05465	Western Area Power Administration - Sierra Nevada Region	WECC	United States
NCR05467	Western Area Power Administration - Upper Great Plains Region	WECC	United States
NCR11825	Western Frequency Response Sharing Group	WECC	United States
NCR11708	Western Interconnect LLC	WECC	United States
NCR11445	Western Power and Steam II LLC	WECC	United States
NCR11458	WestRock CP, LLC	WECC	United States
NCR11906	Willow Springs, LLC	WECC	United States
NCR11292	Windstar Energy, LLC	WECC	United States
NCR10350	Windy Flats Partners, LLC	WECC	United States
NCR10047	Woodland Biomass Power Ltd.	WECC	United States
NCR11428	Yuba County Water Agency	WECC	United States

* Distribution Provider UFLS Only

** Frequency Response Sharing Group

*** Regulation Reserve Sharing Group

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Joint Staff White Paper on Notices of)	
Penalty Pertaining to Violations of Critical)	Docket No. AD19-18-000
Infrastructure Protection Reliability Standards)	

Comments on the role of transparency in preventing regulatory failures

Submitted to FERC on October 25, 2019

Introduction

I am a private citizen who conducts public interest research on the security of the electric grid because I recognize the absolutely vital role of this infrastructure in powering every one of the nation's 16 critical infrastructures and in undergirding not just the well-being but the very survival of our modern society.

On September 3, 2019 I submitted comments and an alternate proposal to this docket, proposing specific information which should be released to the public by default in CIP Notices of Penalty (NOPs), Spreadsheet Notices of Penalty (SNOPs), "Find, Fix, Track" cases (FFT) and Compliance Exemption (CE) cases. Increased transparency (i.e., the release of the names of CIP standard violators) has been supported in this docket by a wide variety of cybersecurity experts, critical infrastructure protection experts, the press, private citizens and both elected and appointed public officials.

The purpose of this second filing is to provide for the record additional information—all related to transparency—which I believe is critical to this discussion. I have conducted several recent studies which raise significant regulatory red flags about the enforcement of Critical Infrastructure Protection (CIP) standards. I am gravely concerned that the public, investors, Congress and other regulators are receiving inadequate and misleading information about physical security and cybersecurity threats to the electric grid. I am also concerned that the nearly impossible complexity of the regulatory structure puts us at risk.

It is my hope that this docket will inform the public, Congress and other stakeholders as well as ensure that The Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC) and the Department of Energy (DOE) are providing accurate public information on the threats to the electric grid—and what is being done about them. I also hope that this docket sheds light on the complexity, limitations and failings of the current regulatory regime.

If we are to defend the critical energy infrastructure against natural and man-made threats, we must fix this hopelessly complex and bureaucratic "Rube Goldberg" of a regulatory system.

Not surprisingly, the release of the names of CIP violators is vehemently opposed by the industry. The industry is desperately clutching at straws with the vague argument that the release of the names of the violators would somehow help the bad actors attack utilities. This is notwithstanding the fact that the names of all NERC regulated entities are published on its website,¹ so the bad guys already have a target list. Thus, the industry's argument is in essence that we need to protect the names of companies that violate CIP standards—rather than correct the underlying corporate misbehavior (i.e., “security by obscurity” which is a largely discredited security method).

However, the fact is that the public—and the national security of the U.S.—is already in grave danger under the present regulatory regime. The industry's longstanding cover-up of the names of the CIP violators has not made us safer. We need transparency and accountability if the longstanding vulnerabilities of our electric grid are to be adequately addressed.

Finally, the regulatory structure of the “electric grid” is mind-numbingly complex: there are more than 60 state and federal government regulators plus the nonprofit NERC and its seven Regional Entities. The FERC view of what constitutes the “electric grid” is likely limited to the “Bulk Power System” (BPS), however the public and the national security view includes all aspects of generation, transmission and distribution of electric power. Entities often overlap into generation, transmission and distribution; thus, many entities have multiple regulators at the state and federal level. The security needs of the *entire system* must be the focus, which underscores the mandate for transparency surrounding security violators anywhere in that system.

Regulatory Red Flags

As detailed below, my research has uncovered the following four areas of concern. All four are all related to the lack of transparency in the current regulatory regime and should be of great interest to the public, investors, state regulators and Congress:

1. *Vast Disparities Exist in Electric Grid Incident Reporting Among Official Sources.*

- *Physical Attacks:* There were 578 physical attacks against the grid reported to the Department of Energy from January 1, 2010 through May 31, 2019. Yet according the NERC annual reliability reports, there was only one during the same period.
- *Cyber Attacks:* There were 29 cyberattacks against the grid reported to the Department of Energy (DOE) from January 1, 2010 through May 31, 2019. The Department of Homeland Security (DHS) reports substantially higher numbers of attacks per year than DOE. Yet according the NERC annual reliability reports, there were no cybersecurity incidents during the same period.

¹ See “NCR Active Entities List” <https://www.nerc.com/pa/comp/Pages/Registration.aspx> (accessed October 19, 2019).

3. *Physical security requirements for the electric grid—and their enforcement—are largely non-existent 6 years after the Metcalf attack.*

- *The physical security standard itself—CIP-014-2 (Physical Security)—is inadequate.* There is no requirement that an entity's risk assessment or physical security plan be reviewed by anyone other than a peer utility. There is no regulator determination whatsoever as to the effectiveness of any entity's physical security plan.
- Enforcement of CIP-014-2 (Physical Security) seems nonexistent: In the six years since the Metcalf California substation attack, there have been only four citations issued for violations of the physical security standards. And these four citations were for administrative violations.

4. *Cybersecurity Standards Remain Inadequate:*

- Despite the fact that the malware is what took down the electric grid in the Ukraine in 2015 and 2016, there remains no requirement that malware in the North American electric grid be detected, mitigated and removed.
- The electric utility industry, including industry lobbyist Edison Electric Institute—whose members include the government of the People's Republic of China²—continue to push back against additional cybersecurity measures, claiming that additional cybersecurity protections would be “unduly burdensome” and “unnecessary.” And in its rulemaking, the Federal Energy Regulatory Commission bought this argument.
- Congress and the Government Accountability Office (GAO) pointed out deficiencies in cybersecurity in 2008. Congress and the Government Accountability Office (GAO) pointed out *almost identical deficiencies in cybersecurity in 2019*. In other words, we have gone literally nowhere in 11 years.

5. *Systematic and Permanent Coverup of Identities of Regulatory Violators:*

- Since July of 2010, the identity of every violator of Critical Infrastructure Protection (CIP) standards has been withheld from the public, investors, state regulators and Congress. As of this writing, there have been a total of 256 FERC dockets involving almost 1,500 regulatory violators covered up. FOIA requests have succeeded in uncovering the identity of less than 10 violators.
- The industry, enabled by NERC, has attempted to permanently withhold these names of the violators despite the fact that the violations in most cases have been mitigated long ago.

These four interrelated areas of concern point to systematic, pervasive flaws in the regulation and protection of the electric grid. Critical information is being withheld from the public and conflicting (and misleading) information is being disseminated by the government and industry—lulling citizens, investors, state regulators and Congress into a false sense of security.

² See report: “Is Edison Electric Institute Helping China Lobby For Less Grid Security?” <https://michaeltmabee.info/edison-electric-institute-china/> (accessed October 19, 2019).

The above summary statements are based on my analysis of the publicly available information, detailed below. To the extent that the Commission or NERC believes that any of the information in the above summary is inaccurate or mischaracterized—perhaps this shows the need for this docket. More transparency would inform the public, investors, Congress and other regulators that all is well—or not.

1. Vast Disparities Exist in Electric Grid Incident Reporting Among Official Sources.

Utility companies and grid operators are required to submit reports on electric disturbance events to the Department of Energy (DOE) on a Form OE-417 (“Electric Emergency Incident and Disturbance Report”).

I did an analysis of all the publicly available OE-417 data from 2010 through May of 2019. (I started in 2010 because that is when the NERC CIP Coverup began.³) First of all, there were 166 different “event types” reported many of which were either duplicates or related. For example, there were at least 24 different “event types” that denoted a physical attack. There were at least 50 “event types” that denoted a disturbance caused by weather. I grouped these 166 “event types” into 15 categories (actually “causes”) so that we could get a sense of what has actually threatened the electric grid in the past 8 1/2 years.

There have been a total of 1,766 electric disturbance events filed during the period of January 1, 2010 through May 31, 2019.

Unfortunately, the public OE-417 data is so bad that there were 251 electric disturbance events where I was unable to identify a cause (14% of the reports). These are highlighted in yellow in the chart. Also, there were 68 generation, transmission and distribution interruptions I was not able to distill down further into what caused the “interruptions.” Therefore, there were a total of 319 electric disturbance events (18%) where I couldn’t identify the cause. I was able to identify a cause in 1447 electric disturbance events, or 82% of the OE-417 reports filed. (I used this 1447 known population for the study below.)

The results are disturbing to say the least.

Weather: As one might suspect, weather was the cause of the majority of the disturbances, 749 events, or 52%. If one believes that weather is getting worse in recent years, then this number should be of great concern.

Physical Attacks: Shockingly, there were 578 physical attacks on the grid, or 40% of the incidents. As I will cover in more detail below, the “physical security standards” for our electric grid are weak to begin with and enforcement is almost non-existent.⁴

Event	#
Weather	749
Cyber Attack	29
Physical Attack	578
Fuel Supply Deficiency	61
Equipment	15
Natural Disaster	10
Wildfire	5
Generation Interruption	16
Transmission Interruption	46
Distribution Interruption	6
Operations	80
Islanding	67
Load Shed	30
Public Appeal	64
?	10
Total Reports	1766
Cause Known from OE-417	1447

³ See Section 4 of this filing below. Full report available at <https://michaelmabee.info/nerc-coverup-investigation-report/> (accessed October 25, 2019).

⁴ See Section 2 of this filing below. Full report available at <https://michaelmabee.info/physical-security-dirty-little-secret/> (accessed October 21, 2019).

Fuel Supply Deficiency: There were 61 events, or 4% of the events. related to fuel supply deficiency. With the retirement of coal and nuclear plants, there is great potential for this problem to get worse.

Cyber Attacks: I was also surprised to learn that there have been 29 cyber attacks reported during this period (2% of the reports). What is most disturbing is that during the same period, the North American Electric Reliability Corporation (NERC) annual reliability reports seem to paint a completely different picture.⁵

OE-417 vs. NERC Reliability Reports

Here is what NERC reported in their annual reports⁶ during this same period (note that the report each year is on the previous year, e.g., the 2019 report is for the events of the year 2018):

- **2019 Report** (page ix): “In 2018, there were no reported cyber or physical security incidents that resulted in an unauthorized control action or loss of load.”
- **2018 Report** (page viii): “In 2017, there were no reported cyber or physical security incidents that resulted in a loss of load.”
- **2017 Report** (page 3): “In 2016, there were no reported cyber or physical security incidents that resulted in a loss of load.”
- **2016 Report** (page v): “In 2015, there were no reported cybersecurity incidents that resulted in loss of load. There was one physical security incident that resulted in a loss of approximately 20 MW of load.”
- **2015 Report** (page 7): “[N]o Reportable Cyber Security Incidents or physical security reportable events resulted in loss of load on the BPS in 2014.” (Misleading, since the Nogales Station in Arizona was attacked by an IED in 2014.⁷)
- **2014 Report:** No mention of cyber or physical attacks. (Misleading, since the Metcalf Transformer attack took place in 2013.⁸)
- **2013 Report:** No mention of cyber or physical attacks.
- **2012 Report:** No mention of cyber or physical attacks.
- **2011 Report:** No mention of cyber or physical attacks.

There is clearly a huge disconnect between what the industry defines as a cybersecurity or physical security incident and what is reported on the OE-417s. The below chart reproduces the public OE-417 entries for the Metcalf attack (2013), the Nogales attack (2014) and the Buckskin attack (2016):

⁵ See Section 3 of this filing below.

⁶ Available at <https://www.nerc.com/pa/RAPA/PA/Pages/default.aspx> (accessed October 21, 2019).

⁷ Holstege, Sean and Randazzo, Ryan, The Republic. “Sabotage at Nogales station puts focus on threats to grid.” June 13, 2014. <https://www.azcentral.com/story/news/arizona/2014/06/12/sabotage-nogales-station-puts-focus-threats-grid/10408053/> (accessed October 24, 2019).

⁸ Smith, Rebecca. The Wall Street Journal. “Assault on California Power Station Raises Alarm on Potential for Terrorism.” February 5, 2014. <https://www.wsj.com/articles/assault-on-california-power-station-raises-alarm-on-potential-for-terrorism-1391570879> (accessed October 24, 2019).

Date Event Began	Time Event Began	Date of Restoration	Time of Restoration	Area Affected	NERC Region	Alert Criteria	Event Type	Demand Loss (MW)	Number of Customers Affected
4/16/2013	1:47 AM	4/18/2013	3:25 PM	California	WECC		Loss of Part of a High Voltage Substation, Physical Attack	N/A	0
6/11/2014	9:30 AM	6/11/2014	9:31 AM	Nogales, Arizona	WECC		Suspected Physical Attack	N/A	N/A
9/25/2016	12:49 PM	9/25/2016	6:20 PM	Utah: Kane County, Garfield County; Arizona: Coconino County, Mohave County	WECC	Physical attack that could potentially impact electric power system adequacy or reliability; or vandalism which targets components of any security systems	Vandalism	20	10000

While this minimal information was reported on the OE-417, NERC did not find any of it noteworthy enough for their annual reports. These three events were significant physical attacks against the grid which NERC chose not to disclose to the public.

The discrepancies in physical security and cybersecurity reporting can be summarized as follows:

- There were 578 physical attacks against the grid reported on the OE-417's between January 1, 2010 through May 31, 2019, yet according the NERC there was only one during the same period.
- There were 29 cyberattacks against the grid reported on the OE-417's between January 1, 2010 through May 31, 2019, yet according the NERC there were none during the same period.

Meanwhile, federal government reports on cyberattacks against the energy sector during the same periods paint a completely different picture. For example, here's what the United States Government Accountability Office (GAO) had to say in Congressional testimony on October 21, 2015 on cyberattacks:

"Cyber incidents continue to affect the electric industry. For example, the Department of Homeland Security's Industrial Control Systems Cyber Emergency Response Team noted that the number of reported cyber incidents affecting control systems of companies in the electricity subsector increased from 3 in 2009 to 25 in 2011. The response team reported that the energy sector, which includes the electricity subsector, led all others in fiscal year 2014 with 79 reported incidents. Reported incidents affecting the electricity subsector have had a variety of impacts, including hacks into smart meters to steal power, failure in control systems devices requiring power plants to be shut down, and malicious software disabling safety monitoring systems."

And the U.S. Department of Homeland Security reported 59 cyberattacks on the energy sector in FY 2016⁹ and 46 cyberattacks in FY 2015.¹⁰

Yet NERC reported no cybersecurity incidents in their annual reliability reports for the same periods.

⁹ National Cybersecurity and Communications Integration Center. "FY 2016 Incidents by Sector." [https://www.us-cert.gov/sites/default/files/Annual Reports/Year in Review FY2016 IR Pie Chart S508C.pdf](https://www.us-cert.gov/sites/default/files/Annual%20Reports/Year%20in%20Review%20FY2016%20IR%20Pie%20Chart%20S508C.pdf) (accessed October 20, 2019).

¹⁰ Idaho National Laboratory. "Cyber Threat and Vulnerability Analysis of the U.S. Electric Sector." August 2016. <https://www.energy.gov/sites/prod/files/2017/01/f34/Cyber%20Threat%20and%20Vulnerability%20Analysis%20of%20the%20U.S.%20Electric%20Sector.pdf> (accessed October 20, 2019).

NERC's definitions apparently don't consider most cyberattacks to be "reportable cyberattacks", the public is confused when the U.S. government reports a substantial number of cyberattacks against the energy subsector and NERC reports no cyberattacks.

While the industry may argue that there are different populations of regulated entities covered by the various reports, clearly, more transparency is needed for the public, investors, Congress and other regulators to understand these discrepancies and make sense of this conflicting information. Regulatory complexity requires even better public information. More on that later.

2. Physical security requirements for the electric grid—and their enforcement—are largely non-existent 6 years after the Metcalf attack.

At approximately 1:00 a.m. on April 16, 2013, a major PG&E transformer substation in Metcalf California was attacked. The attack was well-planned and sophisticated.¹¹ One year later, the Metcalf station was struck again when the fence was cut open and, the facility entered and tools were stolen.¹²

Obviously, the physical security situation had not improved much in the intervening year. In fact, PG&E's credibility was shot when its public statements about its physical security improvements were contradicted by a leaked internal memo.¹³

The April 2013 Metcalf attack was not the only physical attack on critical components of the North American electric grid. As previously noted, according the Department of Energy OE-417 reports, there were 578 physical attacks against the grid reported from January 1, 2010 through May 31, 2019.

However, the attack on the Metcalf substation—and the other attacks—shouldn't have been a surprise. A year before the Metcalf attack, the National Academies published a report titled: *Terrorism and the Electric Power Delivery System*.¹⁴ The report discussed physical security of high-voltage transformers noting:

"High-voltage transformers are of particular concern because they are vulnerable to attack, both from within and from outside the substation where they are located. These transformers are very large, difficult to move, custom-built, and difficult to replace. Most are no longer made in the United States, and the delivery time for new ones can run to months or years."

Then, one year after the Metcalf attack, the Wall Street Journal ran two alarming stories:

¹¹ Smith, Rebecca. The Wall Street Journal. "Assault on California Power Station Raises Alarm on Potential for Terrorism." February 5, 2014. <https://www.wsj.com/articles/assault-on-california-power-station-raises-alarm-on-potential-for-terrorism-1391570879> (accessed August 9, 2019).

¹² Wald, Matthew L. The New York Times "California Power Substation Attacked in 2013 Is Struck Again." August 28, 2014. <https://www.nytimes.com/2014/08/29/us/california-power-substation-attacked-in-2013-is-hit-again.html> (accessed October 25, 2019).

¹³ NBC Bay Area "Internal Memo Reveals PG&E Years Away from Substation Security." April 5, 2016 <https://www.nbcbayarea.com/investigations/Internal-Memo-Reveals-PGE-Years-Away-from-Substation-Security-303833811.html> (accessed October 25, 2019).

¹⁴ Available at: <https://www.nap.edu/catalog/12050/terrorism-and-the-electric-power-delivery-system> (accessed October 25, 2019).

- Assault on California Power Station Raises Alarm on Potential for Terrorism. *April Sniper Attack Knocked Out Substation, Raises Concern for Country's Power Grid.*¹⁵
- U.S. Risks National Blackout From Small-Scale Attack. *Federal Analysis Says Sabotage of Nine Key Substations Is Sufficient for Broad Outage.*¹⁶

What was done?

After the February 5, 2014 Wall Street Journal article, the Senate sent a letter on February 7, 2014 to the Federal Energy Regulatory Commission (FERC), to ask them what they were doing to protect the grid.¹⁷ And FERC Responded on February 11, 2014 telling the Senate that:

“Since the attack on the Metcalf facility in April 2013, the Commission’s staff has taken responsive action together with NERC, other federal and state agencies, and transmission and generation asset owners and operators.”¹⁸

Notwithstanding FERC’s assurances to the senate in 2014, the physical security of our critical transformers and facilities remains a complete mess in 2019.

Problem #1: The standard—CIP-014-2 (Physical Security)—is a hollow standard.

As a result of Metcalf, FERC ordered NERC to develop a physical security standard. NERC submitted their proposed standard (known as CIP-014-1¹⁹) on May 23, 2014.

FERC issued an order on November 20, 2014²⁰ literally ordering NERC to change one word. (The word was: “widespread” and was used 30 times in the proposed standard. This word—a slight of pen by NERC’s attorneys—would have excluded many facilities from falling under the standard.)

On October 2, 2015, FERC approved the “Physical Security” standard, known as CIP-014-2.²¹ Unfortunately, the physical security standard requires very little:

1. Requirement 1: Each Transmission Owner shall perform a risk assessment of its Transmission stations and Transmission substations.
2. Requirement 2: Each Transmission Owner shall have an unaffiliated third party verify the risk assessment [e.g., a peer grid company would meet the requirement—“Hey, if you verify mine, I’ll verify yours”].

¹⁵ Smith, Rebecca. Wall Street Journal. February 5, 2014. Available at: <https://www.wsj.com/articles/assault-on-california-power-station-raises-alarm-on-potential-for-terrorism-1391570879> (accessed October 25, 2019).

¹⁶ Smith, Rebecca. Wall Street Journal. March 12, 2014. Available at: <https://www.wsj.com/articles/u-s-risks-national-blackout-from-small-scale-attack-1394664965> (accessed October 25, 2019).

¹⁷ Available at: <https://www.ferc.gov/industries/electric/indus-act/reliability/chairman-letter-incoming.pdf> (accessed October 25, 2019).

¹⁸ Available at: <https://www.ferc.gov/industries/electric/indus-act/reliability/chairman-letter-feinstein.pdf> (accessed October 25, 2019).

¹⁹ Available at: <https://www.nerc.com/pa/Stand/ReliabilityStandards/CIP-014-1.pdf> (accessed October 25, 2019).

²⁰ Available at: <https://www.ferc.gov/whats-new/comm-meet/2014/112014/E-4.pdf> (accessed October 25, 2019).

²¹ Available at: <https://www.nerc.com/pa/Stand/ReliabilityStandards/CIP-014-2.pdf> (accessed October 25, 2019).

3. Requirement 3: If a Transmission Owner operationally controls an identified Transmission station or Transmission substation, it must notify the Transmission Operator that has operational control of the primary control center.
4. Requirement 4: Each Transmission Owner shall conduct an evaluation of the potential threats and vulnerabilities of a physical attack to each of their respective Transmission station(s), Transmission substation(s), and primary control center(s).
5. Requirement 5: Each Transmission Owner shall develop and implement a documented physical security plan(s) that covers their respective Transmission station(s), Transmission substation(s), and primary control center(s).
6. Requirement 6: Each Transmission Owner shall have an unaffiliated third party review the evaluation performed under Requirement R4 and the security plan(s) under Requirement R5 *[again, a peer grid company would meet the requirement]*.

That's it. All the infrastructure owner must do is to have a binder with a bunch of papers labeled "Physical Security Plan" and have any peer utility they choose review the "risk assessment," "evaluation" and "security plan(s)". No need for it to be anybody who knows anything significant about physical security.

And there is no requirement as to what the "Physical Security Plan" must include—or even that it be effective. Nobody with regulatory authority even has to even approve it—All you need is somebody to "review" it. What if the "reviewer" happens to say "this plan sucks?" It doesn't matter. The only requirement is that the three-ring binder be "reviewed." (I guess most any papers in a three-ring binder will do.)

That unapproved three-ring binder of papers is what is standing between the United States and a catastrophic widespread power outage caused by a terrorist attack. (Also, it is worthy of note that generation plants are not included in NERC's physical security standard!)

Problem #2: Enforcement of CIP-014-2 seems nonexistent

One would think that after the public and Congressional interest in the Metcalf attack, FERC and NERC would take a special interest in the enforcement of the physical security standards. Unfortunately, one would be wrong. How many times since Metcalf have utilities been cited for violations of standard CIP-014-2?

Four.

We have had 578 physical attacks to the grid (that have been publicly disclosed) yet, utilities have been cited for violations of the standard only four (4) times in the six (6) plus years since the Metcalf attack. It would appear that this standard and regulatory scheme are not working. Here are the facts.

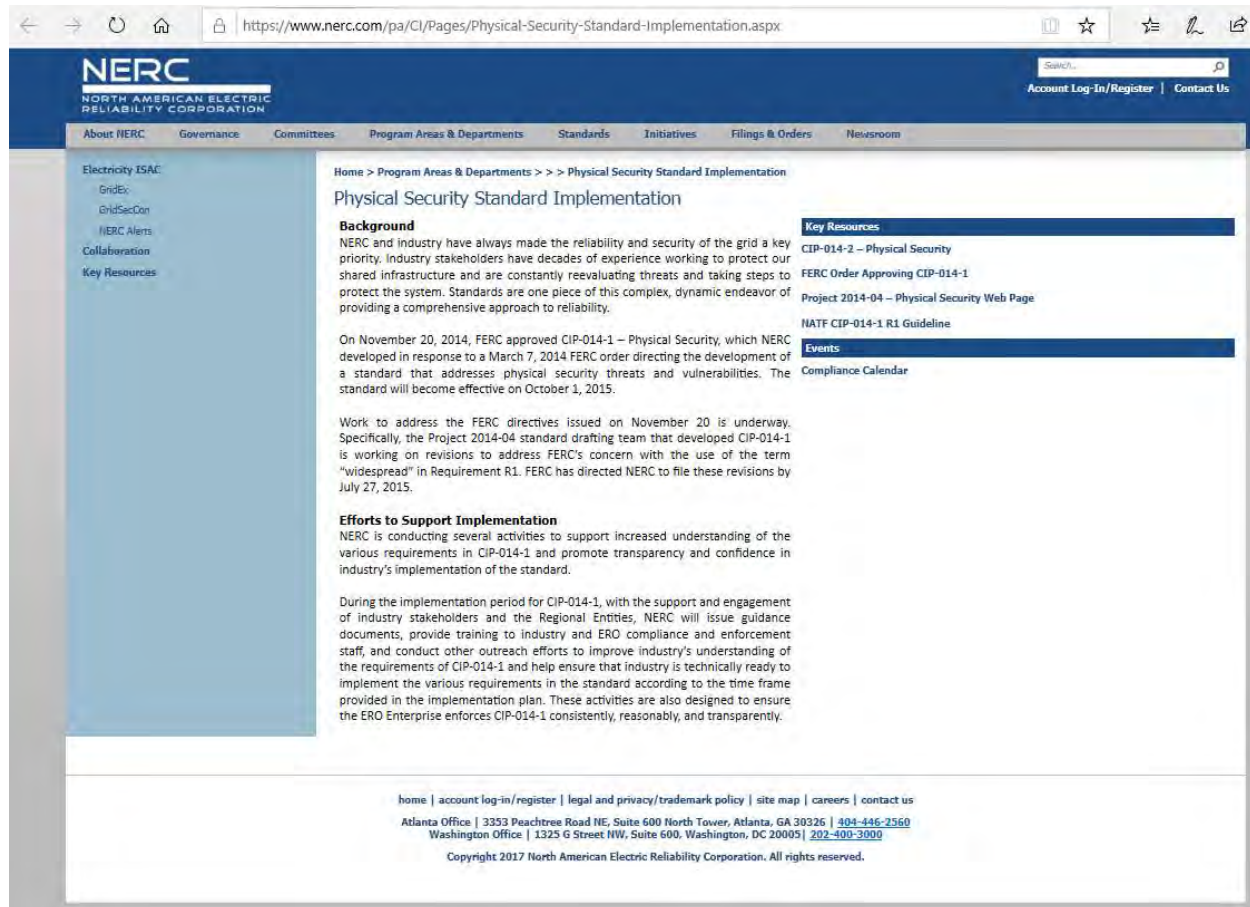
- There are 1,500 entities regulated by NERC.
- There are over 2000 EHV LPTs²² (Extra High Voltage Large Power Transformers) in the United States and tens of thousands of LPTs.

²² U.S. Department of Energy "Large Power Transformers and the U.S. Electric Grid." June 2012. https://www.energy.gov/sites/prod/files/Large_Power_Transformer_Study_-_June_2012_0.pdf (accessed October 25, 2019).

- There have been four (4) citations for non-compliance with the physical security “standards” since Metcalf.

The American people are not stupid. We see these transformers unguarded behind chain-link fences as we drive up the road or walk our dogs.

So how seriously does NERC take physical security? Not very seriously judging by their lack of effort to update their website. Here is a screenshot of NERC’s website²³ on “Physical Security” taken on October 18, 2019. The webpage is talking about CIP-014-1. This standard has been superseded since October 2, 2015.



Oh, and that one link you see to “CIP-014-2 – Physical Security” on the right? It leads to an older version of the standard that notes on the last page: “This standard has not yet been approved by the applicable regulatory authority.”²⁴

²³ Screenshot taken on October 18, 2019 of URL: <https://www.nerc.com/pa/CI/Pages/Physical-Security-Standard-Implementation.aspx>.

²⁴ I downloaded a copy of this document on October 24, 2019 and it is preserved here: <https://michaeltabee.info/wp-content/uploads/2019/10/Older-CIP-014-2-standard-downloaded-on-2019-10-24.pdf>

NERC's physical security webpage does not look as if it has been updated in almost 4 years. What does that tell us about NERC management? (When I wrote an article about this issue exactly six months ago, I had hoped that perhaps NERC would take notice and update their webpage. I should not be surprised that it remains now just as I found it back then.)

So, let's take a look at the four times NERC found CIP-014-2 violations:

- In FERC Docket No. NP19-4-000²⁵ (one Violation—which everybody knows is Duke Energy Corp.²⁶), Duke apparently excluded one substation from its risk assessment because they didn't think it met the criteria for inclusion.
- In FERC Docket No. NP18-14-000²⁷ (one violation), the "Unidentified Registered Entity" failed to do a risk assessment on one substation due to a "management oopsy."
- And in FERC Docket No. NP17-29-000²⁸ (two violations), the "Unidentified Registered Entity" failed to include one control center in its 1) risk assessment and 2) security plan (two violations) because an employee who knew what they were doing left the company, leaving nobody else at the company who knew what they were doing.

One will notice that all four of these "violations" are administrative in nature and have nothing to do with whether there is actually meaningful physical security in place.

History of the "Physical Security" standards

CIP-001-1 (Sabotage Reporting)²⁹ became effective on June 4, 2007. Utilities were cited for its violation 404 times between 6/4/2008 and 5/26/2011. It then morphed into CIP-001-1a (February 2, 2011)³⁰ and CIP-001-2a (August 2, 2011)³¹—neither of which were EVER cited.

Meanwhile, EOP-004-1 (Disturbance Reporting)³², which covered "equipment damage" among other things, had violations 16 times between 2009 and 2013.

NERC began to look at merging CIP-001 and EOP-004 "to eliminate redundancies" and on June 20, 2013, FERC approved³³ merging CIP-001-2a (Sabotage Reporting) and EOP-004-1 (Disturbance Reporting) into EOP-004-2 (Event Reporting)³⁴. (CIP-001-2a Sabotage Reporting and EOP-004-1 Disturbance Reporting were then "Retired.") EOP-004-2 covers reporting "damage or destruction of a facility." EOP-004-2 and its successors have never been found to be violated.

Here is the enforcement history of these various standards:

²⁵ Available at: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14739324 (accessed October 25, 2019).

²⁶ Sobczak, Blake and Behr, Peter. E&E News. "Duke agreed to pay record fine for lax security — sources." February 1, 2019. <https://www.eenews.net/stories/1060119265> (accessed October 25, 2019).

²⁷ Available at: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14675460 (accessed October 25, 2019).

²⁸ Available at: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14605551 (accessed October 25, 2019).

²⁹ Available at: <https://www.nerc.com/files/CIP-001-1.pdf> (accessed October 25, 2019).

³⁰ Available at: <https://www.nerc.com/files/CIP-001-1a.pdf> (accessed October 25, 2019).

³¹ Available at: <https://www.nerc.com/files/CIP-001-2a.pdf> (accessed October 25, 2019).

³² Available at: <https://www.nerc.com/files/EOP-004-1.pdf> (accessed October 25, 2019).

³³ FERC Order Approving Reliability Standard. 143 FERC ¶ 61,252. <https://www.ferc.gov/whats-new/comm-meet/2013/062013/E-8.pdf> (accessed October 25, 2019).

³⁴ Available at: <https://www.nerc.com/files/EOP-004-2.pdf> (accessed October 25, 2019).

- 404 Citations issued for CIP-001-1 (Sabotage Reporting) between 2008 and 2011
- 16 Citations were issued for EOP-004-1 (Disturbance Reporting) between 2009 and 2013—not all related to damage.

Metcalf happened on April 16, 2013, but then...

- No citations have been issued for EOP-004-2 (effective June 20, 2013)
- No citations have been issued for EOP-004-3 (effective November 19, 2015)
- No citations have been issued for EOP-004-4 (effective January 18, 2018)

And adding in the CIP-014 physical security Standard:

- No violation citations have been issued for CIP-014-1
- Four violation citations have been issued for CIP-014-2
 - NP19-4-000 (one violation)
 - NP18-14-000 (one violation)
 - NP17-29-000 (two violations)

I emphasize: There have been only four (4) NERC Physical Security standard violations cited since the Metcalf attack.

3. Cybersecurity Standards Remain Inadequate:

We know from open sources that state actors such as Russia and China have penetrated the U.S. electric grid for over a decade.

Ten years ago, on April 8, 2009 the *Wall Street Journal* published an article entitled “Electricity Grid in U.S. Penetrated By Spies” in which it was reported:³⁵

Cyberspies have penetrated the U.S. electrical grid and left behind software programs that could be used to disrupt the system, according to current and former national-security officials.

The spies came from China, Russia and other countries, these officials said, and were believed to be on a mission to navigate the U.S. electrical system and its controls. The intruders haven’t sought to damage the power grid or other key infrastructure, but officials warned they could try during a crisis or war.

“The Chinese have attempted to map our infrastructure, such as the electrical grid,” said a senior intelligence official. “So have the Russians.”

On January 10, 2019—10 years later—the *Wall Street Journal* published an article entitled “America’s Electric Grid Has a Vulnerable Back Door—and Russia Walked Through It.” The article reports:³⁶

³⁵ Available at: <https://www.wsj.com/articles/SB123914805204099085> (accessed October 19, 2019).

³⁶ Available at: <https://www.wsj.com/articles/americas-electric-grid-has-a-vulnerable-back-doorand-russia-walked-through-it-11547137112> (accessed October 19, 2019).

A reconstruction of the hack reveals a glaring vulnerability at the heart of the country's electric system. Rather than strike the utilities head on, the hackers went after the system's unprotected underbelly—hundreds of contractors and subcontractors like All-Ways who had no reason to be on high alert against foreign agents. From these tiny footholds, the hackers worked their way up the supply chain. Some experts believe two dozen or more utilities ultimately were breached.

Despite the fact that Russia and China have been probing the grid and likely planting malware for over a decade, presently, there is no requirement for malware detection, mitigation and removal. In fact, FERC declined to direct NERC to develop such a standard on December 28, 2017:³⁷

"The Foundation for Resilient Societies filed a petition asking the Commission to require additional measures for malware detection, mitigation, removal and reporting. We decline to propose additional Reliability Standard measures at this time for malware detection, mitigation and removal, based on the scope of existing Reliability Standards, Commission- directed improvements already being developed and other ongoing efforts. However, we propose to direct broader reporting requirements. Currently, incidents must be reported only if they have 'compromised or disrupted one or more reliability tasks,' and we propose to require reporting of certain incidents even before they have caused such harm or if they did not themselves cause any harm." [Emphasis added.]

Russian malware is what took down the electric grid in the Ukraine in 2015³⁸ and 2016³⁹. And yet, there is no requirement for malware detection, mitigation and removal in the U.S. electric grid? This doesn't even make sense.

So, on December 28, 2017 the Commission declined "to propose additional Reliability Standard measures at this time for malware detection, mitigation and removal, based on the scope of existing Reliability Standards, Commission- directed improvements already being developed and other ongoing efforts."

It sounds from this statement like there could be some non-public things going on to protect us. Therefore, the public should "move along—nothing to see here."

Fast forward to the February 14, 2019 Senate Committee on Energy and Natural Resources hearing entitled: "Hearing to Consider the Status and Outlook for Cybersecurity Efforts in the Energy Industry."⁴⁰

³⁷ Proposed Rule "Cyber Security Incident Reporting Reliability Standards." [Docket Nos. RM18–2–000 and AD17–9–000]. Available at: <https://www.govinfo.gov/content/pkg/FR-2017-12-28/pdf/2017-28083.pdf> (accessed October 19, 2019).

³⁸ ICS Alert (IR-ALERT-H-16-056-01) Cyber-Attack Against Ukrainian Critical Infrastructure. February 25, 2016. <https://ics-cert.us-cert.gov/alerts/IR-ALERT-H-16-056-01> (accessed October 18, 2019).

³⁹ Greenberg, Andy. Wired. 'Crash Override': The Malware That Took Down a Power Grid. June 12, 2017. <https://www.wired.com/story/crash-override-malware/> (accessed October 18, 2019).

⁴⁰ Available at: <https://www.energy.senate.gov/public/index.cfm/hearings-and-business-meetings?ID=FE0534E7-2FC7-4DB0-BEA6-2634D3821ADD#> (accessed October 19, 2019).

Over a year after FERC declined to propose Reliability Standard measures for malware detection, mitigation and removal, Senator Angus King questioned NERC CEO James B. Robb on the issue:

Sen. King: “Okay let me ask another question. Do any of our utilities have Kaspersky, Huawei, or ZTE equipment in their system?”

Mr. Robb: “We issued a NERC alert...”

Sen. King: “I didn’t ask you if you issued an alert. I asking you do any of our utilities have ZTE, Huawei, or Kaspersky equipment or software in their system?”

Mr. Robb: “Not to my knowledge.”

Sen. King: “Not to your knowledge. Have you surveyed any of the utilities to determine that?”

Mr. Robb: “Uhhh, I don’t believe we have.”

Sen. King: “I think that would be a good idea don’t you?”

Mr. Robb: “I’ll take that on.”

In other words, a year later, the regulators hadn’t even checked to see if there is Russian or Chinese equipment or software installed on the electric grid.

Meanwhile, the U.S. Government is issuing alerts that the U.S. electric grid is under attack by state actors:

- October 20, 2017 “Advanced Persistent Threat Activity Targeting Energy and Other Critical Infrastructure Sectors”⁴¹
- March 15, 2018 “Russian Government Cyber Activity Targeting Energy and Other Critical Infrastructure Sectors”⁴²
- December 20, 2018 “Intrusions Affecting Multiple Victims Across Multiple Sectors”⁴³

On January 21, 2021—Four years after the Foundation for Resilient Societies submitted a petition for rulemaking to, among other things, address the lack of a standard to detect, mitigate or remove malware—the modified reliability standard CIP-008-6 (Cyber Security—Incident Reporting and Response Planning) will become effective. The only real improvement will be to incident reporting.

⁴¹ US-CERT Alert (TA17-293A) “Advanced Persistent Threat Activity Targeting Energy and Other Critical Infrastructure Sectors” October 20, 2017. <https://www.us-cert.gov/ncas/alerts/TA17-293A> (accessed October 20, 2019).

⁴² US-CERT Alert (TA18-074A) “Russian Government Cyber Activity Targeting Energy and Other Critical Infrastructure Sectors.” March 15, 2018. <https://www.us-cert.gov/ncas/alerts/TA18-074A> (accessed October 20, 2019).

⁴³ US-CERT Alert (TA17-117A) “Intrusions Affecting Multiple Victims Across Multiple Sectors” December 20, 2018. <https://www.us-cert.gov/ncas/alerts/TA17-117A> (accessed October 20, 2019).

So, there is still no requirement to detect, mitigate or remove malware. But if a utility bumbles across it, they are at least required to report it—**After January 21, 2021!**

Another disgraceful example of the lack of action on cybersecurity is the Aurora vulnerability—the continuing implications of which are very instructive today. In 2007 the Department of Homeland Security and the Idaho National Laboratory informed the industry⁴⁴ about the risk of a cyber-induced “Aurora Vulnerability” which could cause physical damage to grid infrastructure.⁴⁵

Leading cybersecurity experts have been warning about Aurora since 2008⁴⁶ and that these experts also consider the cyberattacks in Ukraine as merely a warning⁴⁷ due to the fact that the Russian’s could have, but chose NOT to exploit the Aurora vulnerability. The Department of Defense spent American taxpayer dollars to help create hardware to mitigate the Aurora vulnerability and offered these Cooper Power Systems iGR-933 Rotating Equipment Isolation Devices (REIDs) *free of charge* to utilities, and despite the fact that NERC ES-ISAC issued an initial Advisory Alert on Aurora in 2007 and another on Oct. 13, 2010, to date, it appears that only *two utilities* have decided to install these mitigation devices while the rest of the devices, which were paid for by U.S. taxpayers, likely collect dust in a warehouse somewhere (hopefully) in the United States.⁴⁸

On May 21, 2008 Representative James R. Langevin, chairman of the House Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, in his opening statement to a hearing on cybersecurity⁴⁹ noted:

First, we will receive an update from the Federal Energy Regulatory Commission, FERC, and the North American Electric Reliability Corporation, NERC, about electric industry efforts to mitigate a cyber vulnerability known as Aurora. I think we could search far and wide and not find a more disorganized, ineffective response to an issue of national security of this import. Everything about the way this vulnerability was handled, from press leaks, to DHS’s failure to provide more technical details to support the results of its test, to NERC’s dismissive attitude to the industry’s halfhearted approach toward mitigation, leaves me with little confidence that we are ready or willing to deal with the cybersecurity threat.

⁴⁴ See NERC Press Release: “NERC Issues AURORA Alert to Industry.” October 14, 2010. https://michaelsabee.info/wp-content/uploads/2019/10/PR_AURORA_14_Oct_10.pdf (accessed October 24, 2019)

⁴⁵ Meserve, Jeanne. CNN. “Mouse click could plunge city into darkness, experts say.” September 27, 2007. <http://edition.cnn.com/2007/US/09/26/power.at.risk/index.html> (accessed October 24, 2019)

⁴⁶ See Unfettered Blog: “One reason why we need regulation” <https://www.controlglobal.com/blogs/unfettered/one-reason-why-we-need-regulation/>

⁴⁷ See Unfettered Blog: “Waterfall Security podcast on Aurora and the need for engineers” <https://www.controlglobal.com/blogs/unfettered/waterfall-security-podcast-on-aurora-and-the-need-for-engineers/> or <https://waterfall-security.com/podcasts/joe-weiss> (accessed October 24, 2019).

⁴⁸ See “What You Need to Know (and Don’t) About the AURORA Vulnerability” <https://www.powermag.com/what-you-need-to-know-and-dont-about-the-aurora-vulnerability/?printmode=1>

⁴⁹ “Implications of Cyber Vulnerabilities on the Resilience and Security of the Electric Grid.” Before the Committee on Homeland Security, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology. (110th Congress) May 21, 2008. <https://www.gpo.gov/fdsys/pkg/CHRG-110hhrg43177/pdf/CHRG-110hhrg43177.pdf> (accessed October 24, 2019). Hearing video available at: <https://www.c-span.org/video/?205553-1/security-electric-grid> (accessed October 24, 2019).

As time passes, I grow particularly concerned by NERC, the self-regulating organization responsible for ensuring the reliability of the bulk power system. Not only do they propose cybersecurity standards that, according to the GAO and NIST, are inadequate for protecting critical national infrastructure, but throughout the committee's investigation they continued to provide misleading statements about their oversight of industry efforts to mitigate the Aurora vulnerability.

If NERC doesn't start getting serious about national security, it may be time to find a new electric reliability organization. NERC can begin demonstrating its commitment by incorporating more of the NIST security controls in the next iteration of its reliability standards.

Also, of note, U.S. House Representative Bill Pascrell accused NERC of lying about their cybersecurity follow-up and requested that NERC be held in contempt of Congress.⁵⁰

That hearing was in 2008. So, what is the public to make of the fact that the Government Accountability Office (GAO) issued a report in September of 2019⁵¹ finding:

The Federal Energy Regulatory Commission (FERC)—the regulator for the interstate transmission of electricity—has approved mandatory grid cybersecurity standards. However, it has not ensured that those standards fully address leading federal guidance for critical infrastructure cybersecurity—specifically, the National Institute of Standards and Technology (NIST) Cybersecurity Framework.

Eleven years have elapsed and we are in exactly the same place on cybersecurity as we were in 2008?

Please excuse the public if we are skeptical that “Commission- directed improvements already being developed and other ongoing efforts” are keeping us safe. It does not appear by the testimony in the Congressional Hearings between 2008 and 2019 and the other evidence above (not the least of which is that NERC was caught lying to Congress about cybersecurity already) that FERC and NERC have done enough to protect the grid.

The public needs transparency and accountability to see whether FERC and NERC are up to the task of securing the electric grid from cybersecurity threats. The publicly available evidence indicates they are not.

4. Systematic and Permanent Coverup of Identities of Regulatory Violators:

Since July of 2010, the identity of every violator of Critical Infrastructure Protection (CIP) standards has been withheld from the public, investors, state Public Utility Commissions (PUCs) and Congress. Prior to

⁵⁰ See Hearing video and record: <https://michaelmabee.info/cyber-vulnerabilities-hearing/> (accessed October 24, 2019).

⁵¹ U.S. Government Accountability Office. “Critical Infrastructure Protection: Actions Needed to Address Significant Cybersecurity Risks Facing the Electric Grid.” GAO-19-332: Published: Aug 26, 2019. Publicly Released: Sep 25, 2019.

<https://www.gao.gov/products/GAO-19-332> (accessed October 22, 2019).

this “white paper” docket, NERC and FERC were attempting to permanently withhold the names of the violators despite the fact that the violations in most cases have been long ago mitigated.

I have been conducting an investigation since March of 2018 into NERC’s practice of withholding the identities of CIP violators from the public. This investigation has revealed that from July of 2010 through September of 2019 there had been 256 FERC dockets involving almost 1,500 “Unidentified Registered Entities.”⁵² In each of these instances, the identity of the regulatory violator was withheld from the public.⁵³ As part of the investigations, I have filed six Freedom of Information Act Requests, three of which are still pending, covering 253 FERC dockets.⁵⁴

We know for a fact from open sources that the Russians and the Chinese have been in our electric grid for over a decade:

- April 8, 2009 Wall Street Journal: “Electricity Grid in U.S. Penetrated By Spies”⁵⁵
- January 10, 2019 Wall Street Journal: “America’s Electric Grid Has a Vulnerable Back Door—and Russia Walked Through It.”⁵⁶

So, if keeping the names of the CIP violators from the public was going to make us safer, wouldn’t it have worked by now? I have concluded that “secret regulation” of CIP standards has not worked. It appears from the available evidence that the real reason for the “protection” of the names of the regulatory violators is because the industry does not want to be held accountable for doing more than the minimum on physical and cyber security. There appears to be no legitimate security reason to withhold the names of regulatory violators in perpetuity as is currently the practice.

Notably the electric utility industry has threatened to stop “self-reporting” violations if FERC begins to release the names of CIP violators. The Trade Associations’ Motions to Intervene in FERC Docket No. NP19-4-000⁵⁷ contains a not so thinly veiled threat:

“If the Commission begins releasing entity names in addition to the information already made public in the posted Notices of Penalty, then Registered Entities may re-evaluate whether they will continue to self-report security information knowing that providing such information to their regulators may be disclosed to the public, including to people seeking to attack their systems. In addition, Registered Entities also may re-evaluate what information is included in their mitigation plans.”

⁵² Note: “Unidentified Registered Entity” or “URE” is the industry euphemism for CIP standard violators whose names are being withheld by NERC. As of 2019 NERC began hiding the number of UREs covered in spreadsheet NOPs, so we can no longer accurately determine the number of URE’s involved and are making low-end estimates of the number of entities.

⁵³ A detailed report of the investigation is available here: <https://michaelmabee.info/nerc-coverup-investigation-report/> (accessed October 25, 2019). Also see: <https://michaelmabee.info/grid-coverup-continues/> (accessed October 25, 2019).

⁵⁴ Details, updates and copies of my FOIA requests and responses are available here: <https://michaelmabee.info/cip-violation-database/> (accessed October 25, 2019).

⁵⁵ Available at: <https://www.wsj.com/articles/SB123914805204099085> (accessed October 25, 2019).

⁵⁶ Available at: <https://www.wsj.com/articles/americas-electric-grid-has-a-vulnerable-back-doorand-russia-walked-through-it-11547137112> (accessed October 25, 2019).

⁵⁷ Available at: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14756159 (accessed October 25, 2019).

This is an extraordinary threat that the entire industry represented by the Trade Associations, and who are subject to mandatory reliability standards under federal law,⁵⁸ will essentially engage in a regulatory mutiny if the Commission decides to release the names of regulatory violators to the public, as its past orders and regulations require.

The industry is essentially arguing that the names of the regulatory violators constitutes “Critical Electric Infrastructure Information” (CEII) and should be withheld from the public permanently (even after the violations are mitigated). This argument is unsupported by FERC regulations and past FERC orders.⁵⁹

There is a public interest in disclosing the names of regulatory violators because:

- Disclosing the names of the violators might lead the public and Congress to assess how well the regulatory system is working.
- This information would inform the public, investors, PUCs and Congress as to whether the current regulatory system has adequately thwarted threats to the grid.
- This information could lead the public, investors, PUCs and Congress to conclude that better investment in the critical infrastructures is necessary.

These are public policy questions, not CEII.

In sum, CIP regulations should protect the U.S. electric grid by holding the electric utility companies and grid operators accountable to protect the portion of the U.S. critical infrastructure that they own or operate. Instead, the electric utility industry has twisted this regulatory scheme into a sham where companies have no incentive to do more than the minimum. If caught violating a CIP standard, NERC and the Regional Entities will settle the matter privately with the “unidentified registered entities” negotiating a “penalty” that the “unidentified registered entities” are willing to pay and will keep the matter from public view. It looks like a system of back-room settlements and handshake penalties. A great deal for the “unidentified registered entities”—not so much for the American people.

⁵⁸ 16 U.S. Code § 824o(b)(1) (Electric reliability) provides that: “The Commission shall have jurisdiction, within the United States, over the ERO certified by the Commission under subsection (c), any regional entities, and all users, owners and operators of the bulk-power system, including but not limited to the entities described in section 824(f) of this title, for purposes of approving reliability standards established under this section and enforcing compliance with this section. *All users, owners and operators of the bulk-power system shall comply with reliability standards that take effect under this section.*” [Emphasis added.]

⁵⁹ For further details, see my Motion to Intervene in FERC Docket NP19-4-000 available at: <https://michaelmabee.info/wp-content/uploads/2019/02/FERC-Docket-NP19-4-Motion-to-Intervene-Mabee.pdf> (accessed August 12, 2019); Reply Comments in FERC Docket NP19-4-000 available at: <https://michaelmabee.info/wp-content/uploads/2019/05/Reply-Comments-of-Michael-Mabee-in-NP19-4-000.pdf> (accessed August 12, 2019); Petition for Rulemaking available at: <https://michaelmabee.info/wp-content/uploads/2019/02/Petition-for-Rulemaking-Mabee-with-exhibits-1.pdf> (accessed August 12, 2019).

The mind-numbing complexity of the regulatory scheme requires transparency (and, likely, reform).

Who regulates the grid? (Spoiler alert: no one)

The North American electric grid is an amazing human accomplishment. It is the largest machine in the history of the world, built piece by piece over many generations. Unfortunately, the regulatory system has also been built piece by piece over the years and today is as overly complex and unwieldy as a Rube Goldberg cartoon. The Federal Energy Regulatory Commission (FERC) has authority only over the “bulk power system” which is largely the interstate transmission system. However, FERC’s authority is complicated and indirect: largely the grid is self-regulated through a private corporation—the North American Electric Reliability Corporation (NERC). Again, this is largely just the “bulk power system.”

In fact, our electric grid today is regulated by over 60 regulators at the federal and state level as well as a mix of non-governmental non-profit regulators. To further complicate matters, on the federal level alone we have numerous agencies with some degree of interest in protecting the electric grid: FERC, DOE, DHS, NRC and DOD to name a few obvious ones. However, only FERC has any authority over “the electric grid” and FERC’s limited authority is only over the Bulk Power System—that portion at 100kV and above.

Each state has its own Public Utility Commission (PUC) which regulates distribution and, in some cases, generation plants. Some generation plants are regulated by other agencies, such as the Nuclear Regulatory Commission (NRC).

So, in the end, no one body regulates “the grid” (i.e., generation, transmission and distribution). Our most critical infrastructure consists of “patchwork” regulation, dependent of scores of agencies, with scores of often conflicting agendas, varying ability (or willingness) to communicate. And most of all, it depends on thousands of companies to do the right thing when there is no strong requirement or incentive for them to do so.

In sum, the present regulatory system is a disaster waiting to happen.

Moreover, many companies transcend regulatory lines. Many companies fall under both FERC/NERC and PUC jurisdiction (and possibly other agencies, such as the NRC).

- State PUC’s need to know the identities of the CIP violators because, among other things, state PUC’s often control the funding for mitigation.
- Some of these companies may supply critical DOD and DHS facilities. DOD and DHS need to know if companies they are dependent upon to power facilities critical to national security are violating CIP standards.
- Some of these companies may operate nuclear generation plants and fall under the jurisdiction of the NRC as well as FERC/NERC and a PUC (or more than one PUC). These regulators all need to know if the companies they regulate are in violation of CIP standards.

- Some of these companies are also regulated by the Securities Exchange Commission and have reporting requirements for material events. Since the names of CIP violators are being covered up, investors are unaware of the cybersecurity risks that these publicly traded companies face—and whether the “C Suite” is taking appropriate actions to mitigate (*or at least disclose*) investor risk.

It is hard to imagine how such a Balkanized system would function in any context, and clearly it is not functioning efficiently in terms of the CIP red flags previously discussed. And we are talking here about protecting our most critical infrastructure—one in which the lives of 327 million Americans and our very national security depends.

Until the regulatory system is reformed by Congress, disclosure and transparency are critical to our national security. There is no possible way for there to be accountability for the thousands of companies involved in the generation, transmission and distribution of electric power in the U.S. (the whole grid—not just the BPS) except for transparency by FERC and NERC.

Who pays the CIP fines and who pays for mitigation?

If the possibility of hundreds of thousands, if not millions of deaths in a long-term blackout isn’t disturbing enough, consider this:

- Who is paying for the CIP violation fines—the ratepayers or the shareholders?
- Who is paying for any mitigation ordered or agreed upon—the ratepayers or the shareholders?
- Most importantly, *who decides who pays?*

The last question is easy: Absent transparency, the regulatory violator decides who pays. This is why it is critical that the Commission release the names of the regulatory violators along with sufficient information so that the public (“ratepayers”), investors (“shareholders”), the PUCs (the ones who should be making these decisions) and Congress (the oversight) can see what is happening.

Last year, PG&E Corp was fined 2.7 million dollars for a cyber breach (which was exposed by one of my Freedom of Information Act requests).⁶⁰ PG&E presumably also had to spend an unknown amount (but likely a substantial amount) of money on mitigation. Somebody had to pay for all of this. Because I could find no disclosure of the event or its costs in PG&E’s filings with the Securities and Exchange Commission, it is impossible for the public to know whether the shareholders or the ratepayers ate these costs—I am sure both groups would like to know.

Does it make a difference in who should pay if a company is a repeat CIP violator? Does it make a difference in who should pay if the company is negligent?

The *last* one who should be deciding who pays *is the regulatory violator*. This decision should be made by the appropriate regulator (the PUC) with full transparency to the two possible victims: the ratepayers and the shareholders.

⁶⁰ See report: <https://michaelmabee.info/pge-endangered-the-grid/> (accessed October 22, 2019).

Ratepayers and investors deserve transparency and accountability. PUCs and Congress deserve sufficient information to effectively regulate and govern. Regulatory violators do not deserve reputational protection by the regulators at the expense of the public interest.

Conclusion

The electric grid—including generation, transmission and distribution—is *the most* critical infrastructure as all other critical infrastructures depend on it.

The American people, investors, Congress and other regulators are not getting enough information to evaluate the threats to the electric grid (generation, transmission and distribution), whether there are repeat violators and whether the regulatory regime is effective. There is ample evidence of regulatory red flags and, from the regulators, only a confusing lack of information. We need action by both FERC and Congress:

FERC is the *only agency* in a position to act immediately to address the vulnerabilities to a critical portion of the electric grid (generation and high voltage transmission) that have been created by the industry's desire to keep the names of the CIP violators secret. FERC must decide in the public interest and make increased transparency its policy.

Congress must also act to streamline or revise this overly complex regulatory system and set a federal minimum for critical infrastructure protection for the entire electric grid, including generation, transmission and distribution. We can no longer leave America's Achilles' heel in this inefficient regulatory morass.

Moreover, we can no longer tolerate the fact that keeping our lights on is dependent upon the discretion of Russia and China.

Recommendations:

1. The Commission should adopt my alternate proposal submitted to this docket on September 3, 2019 as the default disclosure for future Notices of Penalty (NOPs), Spreadsheet Notices of Penalty (SNOPs), "Find, Fix Track" cases (FFT) and Compliance Exemptions (CEs). This alternate proposal would provide sufficient information to the public, investors, Congress and other regulators and would not provide adversaries with actionable information. The alternate proposal has been supported by numerous other commenters on this docket, including internationally renowned security experts.
2. The Department of Energy must enhance the publicly available OE-417 information so that the cause of each reported disturbance and the number of customers affected can be easily discerned.
3. The OE-417s and the NERC annual reliability reports do not tell the American people the same story. NERC's annual reliability reports must address the OE-417 data in order to eliminate this apparent discrepancy. If necessary, The Commission should direct NERC to do this. PUCs will need to be involved, so FERC should suggest that NARUC put this topic on their agenda for immediate action.

4. The Department of Energy Office of the Inspector General should investigate and report on the massive red flags in the enforcement of the physical security standard. Public information indicates that there has been a lack of regulatory action on physical security standards despite the fact that there have been 578 physical attacks against the grid reported from January 1, 2010 through May 31, 2019 according the Department of Energy OE-417 reports. Most disturbingly, NERC has reported only one physical attack in its annual reliability reports over the same period and the violations of the physical security standard have been cited only four times since the Metcalf attack in 2013.
5. The Commission (possibly in collaboration with DOE, DHS, DOD and the National Guard) should “Red Team” utilities in order to evaluate weaknesses and determine whether their cybersecurity and physical security programs are effective. FERC should work with the National Association of Regulatory Utility Commissioners (NARUC) to ensure like actions at the state-level.
6. The Commission should grant the Foundation for Resilient Societies “Motion for the Commission to Hold a Public Hearing” submitted to FERC on October 23, 2019.⁶¹
7. Congress should set a minimum federal floor for CIP standards for the entire electric infrastructure—not just the “bulk power system.”
8. Congress should establish federal regulatory authority for protection of the entire U.S. electric grid—including generation, transmission and distribution.

Respectfully submitted,



Michael Mabee

CC: U.S. Department of Energy—Office of the Inspector General
 U.S. Government Accountability Office
 U.S. Congresswoman Anne Kuster (NH)
 U.S. Senate Committee on Energy and Natural Resources
 U.S. House Committee on Energy and Commerce
 National Association of Regulatory Utility Commissioners

⁶¹ FERC Accession Number: 20191023-5103 Available at <https://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=15388774> (accessed October 24, 2019).

"Unidentified Registered Entity" Dockets

Date	FERC Docket Number	Region	Registered Entity	Entities	Total Penalty (\$)	Years	FOIA	Disclosed=Y Denied=N	NOP	Order	A2 Spreadsheet	Disp
7/6/2010	NP10-130-000	SERC	South Carolina Electric & Gas	1	\$0	9.3	2019-0030	Y	View NOP	View Order		S
7/6/2010	NP10-131-000	SERC	Progress Energy Carolinas	1	\$5,000	9.3	2019-0030	Y	View NOP	View Order		S
7/6/2010	NP10-137-000	WECC	Tuscon Electric Power	1	\$39,000	9.3	2019-0030	Y	View NOP	View Order		S
7/6/2010	NP10-138-000	RFC	Duke Energy Co.	1	\$5,000	9.3	2019-0030	Y	View NOP	View Order		S
7/6/2010	NP10-139-000	WECC	Sunray Energy, Inc.	1	\$3,000	9.3	2019-0030	Y	View NOP	View Order		S
7/6/2010	NP10-140-000	RFC	PJM	1	\$5,600	9.3	2019-0030	Y	View NOP	View Order		S
2/27/2014	NP14-32-000	SPP RE	City Utilities of Springfield, MO	1	\$0	5.7	2019-0019	Y	View NOP	View Order		
5/29/2014	NP14-41-000	WECC	Pacific Gas and Electric Company	1	\$98,500	5.4	2019-0019	Y	View NOP	View Order		
2/28/2018	NP18-7-000	WECC	Pacific Gas and Electric Company	1	\$2,700,000	1.7	2018-0075	Y	View Filing	View Notice		
1/30/2014	NP14-30-000	RFC	Unidentified Registered Entity	1	\$75,000	5.7	2019-0019	N	View NOP	View Order		
3/31/2014	NP14-37-000	WECC	Unidentified Registered Entity	1	\$465,000	5.6	2019-0019	N	View NOP	View Order		
4/30/2014	NP14-39-000	WECC	Unidentified Registered Entity	1	\$155,000	5.5	2019-0019	N	View NOP	View Order		
7/6/2010	NP10-134-000	SPP	Unidentified Registered Entity	1	\$0	9.3	2019-0030		View NOP	View Order		
7/6/2010	NP10-135-000	WECC	Unidentified Registered Entity	1	\$8,000	9.3	2019-0030		View NOP	View Order		S
7/6/2010	NP10-136-000	WECC	Unidentified Registered Entity	1	\$7,000	9.3	2019-0030		View NOP	View Order		
7/30/2010	NP10-159-000	WECC	Unidentified Registered Entity	1	\$109,000	9.2	2019-0030		View NOP	View Order		S
9/13/2010	NP10-160-000	WECC	Unidentified Registered Entity	1	\$0	9.1	2019-0030		View NOP	View Order 1	NERC Filing	S
10/7/2010	NP11-1-000	WECC	Unidentified Registered Entity	1	\$106,000	9.1	2019-0030		View NOP	View Order		S
10/7/2010	NP11-2-000	WECC	Unidentified Registered Entity	1	\$9,000	9.1	2019-0030		View NOP	View Order		S
10/7/2010	NP11-3-000	SERC	Unidentified Registered Entity	1	\$6,000	9.1	2019-0030		View NOP	View Order	View Data Request	S
10/7/2010	NP11-4-000	FRCC	Unidentified Registered Entity	1	\$250,000	9.1	2019-0030		View NOP	View Order		S
10/7/2010	NP11-5-000	SERC	Unidentified Registered Entity	1	\$16,000	9.1	2019-0030		View NOP	View Order	View Data Request	S
11/5/2010	NP11-21-000	RFC	Unidentified Registered Entity	1	\$8,000	9.0	2019-0030		View NOP	View Order		S
11/5/2010	NP11-22-000	SERC	Unidentified Registered Entity	1	\$5,000	9.0	2019-0030		View NOP	View Order		S
11/30/2010	NP11-47-000	SERC	Unidentified Registered Entity	1	\$0	8.9	2019-0030		View NOP	View Order		S
11/30/2010	NP11-56-000	SERC	Unidentified Registered Entity	1	\$0	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-59-000	RFC	Unidentified Registered Entity	1	\$7,000	8.9	2019-0030		View NOP	View Extension		S
12/22/2010	NP11-63-000	WECC	Unidentified Registered Entity	1	\$80,000	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-64-000	WECC	Unidentified Registered Entity	1	\$38,500	8.9	2019-0030		View NOP	View Order		NCV
12/22/2010	NP11-70-000	WECC	Unidentified Registered Entity	1	\$55,000	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-72-000	SERC	Unidentified Registered Entity	1	\$2,000	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-76-000	SERC	Unidentified Registered Entity	1	\$0	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-79-000	FRCC	Unidentified Registered Entity	1	\$100,000	8.9	2019-0030		View NOP	View Order		S
12/22/2010	NP11-81-000	MRO, SPP	Unidentified Registered Entities	2	\$50,000	8.9	2019-0030		View NOP	View Order		S
1/31/2011	NP11-102-000	WECC	Unidentified Registered Entity	1	\$6,500	8.7	2019-0030		View NOP >>	View Order >>		NCV
1/31/2011	NP11-98-000	WECC	Unidentified Registered Entity	1	\$5,000	8.7	2019-0030		View NOP >>	View Order >>		NCV
2/1/2011	NP11-104-000	Various	Unidentified Registered Entities	6	\$9,300	8.7	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	S
2/23/2011	NP11-106-000	RFC	Unidentified Registered Entity	1	\$15,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-111-000	MRO	Unidentified Registered Entity	1	\$120,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-116-000	FRCC	Unidentified Registered Entity	1	\$75,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-124-000	RFC	Unidentified Registered Entity	1	\$100,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-125-000	SPP, RFC	Unidentified Registered Entity	1	\$77,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-127-000	FRCC	Unidentified Registered Entity	1	\$55,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/23/2011	NP11-128-000	WECC	Unidentified Registered Entity	1	\$450,000	8.7	2019-0030		View NOP >>	View Order >>		S
2/28/2011	NP11-133-000	Various	Unidentified Registered Entities	5	\$11,500	8.7	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	NCV
3/30/2011	NP11-136-000	WECC	Unidentified Registered Entity	1	\$14,500	8.6	2019-0030		View NOP >>	View Order >>		NCV
3/30/2011	NP11-137-000	WECC	Unidentified Registered Entity	1	\$106,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-140-000	WECC	Unidentified Registered Entity	1	\$27,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-143-000	SERC	Unidentified Registered Entity	1	\$5,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-145-000	WECC	Unidentified Registered Entity	1	\$13,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-146-000	RFC	Unidentified Registered Entities	3	\$52,500	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-149-000	RFC	Unidentified Registered Entity	1	\$20,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-150-000	MRO	Unidentified Registered Entity	1	\$0	8.6	2019-0030		View NOP >>	View Order >>		NCV
3/30/2011	NP11-155-000	WECC	Unidentified Registered Entity	1	\$2,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-156-000	SERC	Unidentified Registered Entity	1	\$12,500	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-157-000	SERC	Unidentified Registered Entity	1	\$7,000	8.6	2019-0030		View NOP >>	View Order >>		S
3/30/2011	NP11-161-000	WECC	Unidentified Registered Entity	1	\$35,000	8.6	2019-0030		View NOP >>	View Order >>		S

"Unidentified Registered Entity" Dockets

Date	FERC Docket Number	Region	Registered Entity	Entities	Total Penalty (\$)	Years	FOIA	Disclosed=Y Denied=N	NOP	Order	A2 Spreadsheet	Disp
3/31/2011	NP11-162-000	TRE, NPCC	Unidentified Registered Entities	2	\$10,500	8.6	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	S
4/29/2011	NP11-166-000	SPP, TRE	Unidentified Registered Entity	1	\$50,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-167-000	WECC	Unidentified Registered Entity	1	\$89,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-174-000	RFC	Unidentified Registered Entity	1	\$15,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-175-000	WECC	Unidentified Registered Entity	1	\$32,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-176-000	WECC	Unidentified Registered Entity	1	\$80,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-178-000	WECC	Unidentified Registered Entity	1	\$35,000	8.5	2019-0030		View NOP >	View Order >>		S
4/29/2011	NP11-179-000	MRO	Unidentified Registered Entity	1	\$10,000	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-180-000	WECC	Unidentified Registered Entity	1	\$71,500	8.5	2019-0030		View NOP >>	View Order >>		S
4/29/2011	NP11-181-000	FRCC, NPCC	Unidentified Registered Entities	6	\$39,500	8.5	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	S
5/26/2011	NP11-182-000	WECC	Unidentified Registered Entity	1	\$59,000	8.4	2019-0030		View NOP >>	View Order >>		S
5/26/2011	NP11-184-000	RFC	Unidentified Registered Entity	1	\$70,000	8.4	2019-0030		View NOP >>	View Order >>	View Data Request >>	S
5/26/2011	NP11-188-000	SPP	Unidentified Registered Entity	1	\$16,860	8.4	2019-0030		View NOP >>	View Order >>		S
5/26/2011	NP11-189-000	FRCC	Unidentified Registered Entity	1	\$17,000	8.4	2019-0030		View NOP >>	View Order >>		S
5/26/2011	NP11-192-000	WECC	Unidentified Registered Entity	1	\$12,200	8.4	2019-0030		View NOP >>	View Order >>		NCV
5/26/2011	NP11-193-000	WECC	Unidentified Registered Entity	1	\$60,000	8.4	2019-0030		View NOP >>	View Order >>		S
5/26/2011	NP11-198-000	SPP	Unidentified Registered Entity	1	\$17,860	8.4	2019-0030		View NOP >>	View Order >>		S
5/26/2011	NP11-199-000	Various	Unidentified Registered Entities	3	\$3,500	8.4	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	S
6/29/2011	NP11-204-000	WECC	Unidentified Registered Entity	1	\$37,500	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-205-000	WECC	Unidentified Registered Entity	1	\$22,000	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-206-000	NPCC	Unidentified Registered Entity	3	\$80,000	8.3	2019-0030		View NOP >>	View Order >>	View Supplemental >>	S
6/29/2011	NP11-211-000	WECC	Unidentified Registered Entity	1	\$14,000	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-212-000	WECC	Unidentified Registered Entity	1	\$381,600	8.3	2019-0030		View NOP >>	View Order >>		NCV
6/29/2011	NP11-213-000	WECC	Unidentified Registered Entity	1	\$143,500	8.3	2019-0030		View NOP >>	View Order >>	View Supplemental >>	S
6/29/2011	NP11-218-000	WECC	Unidentified Registered Entity	1	\$130,000	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-223-000	SPP	Unidentified Registered Entity	1	\$30,000	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-225-000	RFC	Unidentified Registered Entity	1	\$10,000	8.3	2019-0030		View NOP >>	View Order >>		S
6/29/2011	NP11-226-000	RFC	Unidentified Registered Entity	1	\$85,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-229-000	WECC	Unidentified Registered Entity	1	\$75,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-230-000	RFC	Unidentified Registered Entity	1	\$18,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-233-000	WECC	Unidentified Registered Entity	1	\$70,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-234-000	WECC	Unidentified Registered Entity	1	\$35,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-237-000	RFC	Unidentified Registered Entity	3	\$180,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-243-000	RFC	Unidentified Registered Entity	1	\$20,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-247-000	RFC	Unidentified Registered Entity	1	\$15,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-248-000	WECC	Unidentified Registered Entity	1	\$5,000	8.3	2019-0030		View NOP >>	View Order >>		NCV
7/28/2011	NP11-249-000	WECC	Unidentified Registered Entity	1	\$18,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/28/2011	NP11-250-000	WECC	Unidentified Registered Entity	1	\$12,600	8.3	2019-0030		View NOP >>	View Order >>		NCV
7/28/2011	NP11-251-000	WECC	Unidentified Registered Entity	1	\$7,000	8.3	2019-0030		View NOP >>	View Order >>		S
7/29/2011	NP11-253-000	Various	Unidentified Registered Entities	8	\$26,500	8.3	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
8/31/2011	NP11-261-000	RFC	Unidentified Registered Entity	1	\$70,000	8.2	2019-0030		View NOP >>	View Order >>		S
8/31/2011	NP11-262-000	SPP	Unidentified Registered Entity	1	\$12,000	8.2	2019-0030		View NOP >>	View Order >>		S
8/31/2011	NP11-263-000	TRE	Unidentified Registered Entity	1	\$11,000	8.2	2019-0030		View NOP >>	View Order >>		S
8/31/2011	NP11-264-000	SPP	Unidentified Registered Entity	1	\$8,000	8.2	2019-0030		View NOP >>	View Order >>		S
8/31/2011	NP11-266-000	Various	Unidentified Registered Entities	5	\$63,500	8.2	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
9/30/2011	NP11-269-000	WECC	Unidentified Registered Entity	1	\$225,000	8.1	2019-0030		View NOP >>	View Order >>		S
9/30/2011	NP11-270-000	Various	Unidentified Registered Entities	21	\$193,900	8.1	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	
9/30/2011	RC11-6-000	Various	Unidentified Registered Entities	59	\$0	8.1	2019-0030		View Filing >>	View Order >>	View A-1 Spreadsheet >>	
10/31/2011	NP12-1-000	RFC	Unidentified Registered Entities	3	\$275,000	8.0	2019-0030		View Filing >>	View Order >>	View A-2 Corrected Spreadsheet >>	S
10/31/2011	NP12-2-000	Various	Unidentified Registered Entities	16	\$184,200	8.0	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	S
10/31/2011	RC12-1-000	Various	Unidentified Registered Entities	33	\$0	8.0	2019-0030		View Filing >>	View Order >>	View A-1 Spreadsheet >>	
11/30/2011	NP12-3-000	WECC	Unidentified Registered Entity	1	\$125,000	7.9	2019-0030		View NOP >>	View Order >>		S
11/30/2011	NP12-4-000	WECC	Unidentified Registered Entity	1	\$160,000	7.9	2019-0030		View NOP >>	View Order >>		S
11/30/2011	NP12-5-000	RF, WECC	Unidentified Registered Entities	12	\$89,000	7.9	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	S
11/30/2011	RC12-2-000	Various	Unidentified Registered Entities	30	\$0	7.9	2019-0030		View Filing >>	View Order >>	View A-1 Spreadsheet >>	
12/30/2011	NP12-10-000	Various	Unidentified Registered Entities	21	\$109,600	7.8	2019-0030		View Filing >>	View Order >>	View A-2 Corrected Spreadsheet >>	S
12/30/2011	NP12-9-000	RFC	Unidentified Registered Entity	1	\$60,000	7.8	2019-0030		View NOP >>	View Order >>		S

"Unidentified Registered Entity" Dockets

Date	FERC Docket Number	Region	Registered Entity	Entities	Total Penalty (\$)	Years	FOIA	Disclosed=Y Denied=N	NOP	Order	A2 Spreadsheet	Disp
12/30/2011	RC12-6-000	Various	Unidentified Registered Entities	40	\$0	7.8	2019-0030		View Filing >>	View Order >>	View A-1 Spreadsheet >>	S
1/31/2012	NP12-11-000	WECC	Unidentified Registered Entity	1	\$135,000	7.7	2019-0030		View NOP >>	View Order >>		S
1/31/2012	NP12-12-000	Various	Unidentified Registered Entities	18	\$160,500	7.7	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	Both
1/31/2012	RC12-7-000	Various	Unidentified Registered Entities	30	\$0	7.7	2019-0030		View Filing >>	View Order >>		FFT
2/29/2012	NP12-16-000	WECC	Unidentified Registered Entity	1	\$80,000	7.7	2019-0030		https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12905400			S
2/29/2012	NP12-17-000	SPP RE	Unidentified Registered Entity	1	\$40,000	7.7	2019-0030		https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12905417			S
2/29/2012	NP12-18-000	Various	Unidentified Registered Entities	23	\$222,900	7.7	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	S
2/29/2012	RC12-8-000	Various	Unidentified Registered Entities	24	\$0	7.7	2019-0030		View Filing >>	View Order >>	View A-1 Spreadsheet >>	FFT
3/30/2012	NP12-20-000	WECC	Unidentified Registered Entity	1	\$60,000	7.6	2019-0030		View NOP >>	View Order >>		S
3/30/2012	NP12-22-000	Various	Unidentified Registered Entities	15	\$42,000	7.6	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
3/30/2012	RC12-10-000	Various	Unidentified Registered Entities	12	\$0	7.6	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
4/30/2012	NP12-25-000	RFC	Unidentified Registered Entity	1	\$115,000	7.5	2019-0030		View NOP >>	View Order >>		S
4/30/2012	NP12-26-000	Various	Unidentified Registered Entities	18	\$95,300	7.5	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
4/30/2012	RC12-11-000	Various	Unidentified Registered Entities	18	\$0	7.5	2019-0030		View Supplemental Filing >>		View A-2 Spreadsheet >>	FFT
5/30/2012	NP12-27-000	Various	Unidentified Registered Entities	20	\$48,600	7.4	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet	S
5/30/2012	NP12-29-000	WECC	Unidentified Registered Entity	1	\$162,200	7.4	2019-0030		View NOP >>	View Order >>		NCV
5/30/2012	RC12-12-000	Various	Unidentified Registered Entities	40	\$0	7.4	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
6/29/2012	NP12-36-000	Various	Unidentified Registered Entities	15	\$121,900	7.3	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet	Both
6/29/2012	RC12-13-000	Various	Unidentified Registered Entities	40	\$0	7.3	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
7/31/2012	NP12-37-000	WECC	Unidentified Registered Entities	4	\$134,350	7.2	2019-0030		View NOP >>	View Order >>		S
7/31/2012	NP12-38-000	WECC	Unidentified Registered Entity	1	\$72,000	7.2	2019-0030		https://elibrary.ferc.gov/idmws/co	View Order >>		S
7/31/2012	NP12-40-000	Various	Unidentified Registered Entities	15	\$101,100	7.2	2019-0030		https://elibrary.ferc.gov/idmws/c	View Order >>	View A-2 Spreadsheet >>	Both
7/31/2012	RC12-14-000	Various	Unidentified Registered Entities	30	\$0	7.2	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
8/31/2012	NP12-43-000	WECC	Unidentified Registered Entity	1	\$70,000	7.2	2019-0030		View NOP >>	View Order >>		S
8/31/2012	NP12-44-000	Various	Unidentified Registered Entities	16	\$182,800	7.2	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
8/31/2012	RC12-15-000	Various	Unidentified Registered Entities	38	\$0	7.2	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	FFT
9/28/2012	NP12-45-000	FRCC	Unidentified Registered Entity	1	\$150,000	7.1	2019-0030		View NOP >>	View Order >>		S
9/28/2012	NP12-46-000	WECC	Unidentified Registered Entity	1	\$200,000	7.1	2019-0030		View NOP >>	View Order >>		S
9/28/2012	NP12-47-000	Various	Unidentified Registered Entities	14	\$113,400	7.1	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	Both
9/28/2012	RC12-16-000	Various	Unidentified Registered Entities	41	\$0	7.1	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
10/31/2012	NP13-1-000	WECC	Unidentified Registered Entity	1	\$200,000	7.0	2019-0030		View NOP >>	View Order >>		S
10/31/2012	NP13-4-000	RFC	Unidentified Registered Entities	3	\$725,000	7.0	2019-0030		View NOP >>	View Order >>		S
10/31/2012	NP13-5-000	Various	Unidentified Registered Entities	19	\$216,000	7.0	2019-0030		View NOP >>	View Order >>	View A-2 Spreadsheet >>	S
10/31/2012	RC13-1-000	Various	Unidentified Registered Entities	44	\$0	7.0	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
11/30/2012	NP13-6-000	WECC	Unidentified Registered Entity	1	\$62,500	6.9	2019-0030		View NOP >>	View Order >>		NCV
11/30/2012	RC13-2-000	Various	Unidentified Registered Entities	25	\$0	6.9	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
12/31/2012	NP13-11-000	SPP	Unidentified Registered Entity	1	\$107,000	6.8	2019-0030		View NOP >>			S
12/31/2012	NP13-12-000	Various	Unidentified Registered Entities	21	\$214,000	6.8	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	Both
12/31/2012	NP13-16-000	WECC	Unidentified Registered Entity	1	\$207,000	6.8	2019-0030		View NOP >>			S
12/31/2012	NP13-17-000	RFC	Unidentified Registered Entities	3	\$80,000	6.8	2019-0030		View NOP >>	View Order >>		S
12/31/2012	NP13-18-000	SPP	Unidentified Registered Entity	1	\$153,000	6.8	2019-0030		View NOP >>			S
12/31/2012	NP13-19-000	SERC	Unidentified Registered Entity	1	\$950,000	6.8	2019-0030		View NOP >>			S
12/31/2012	RC13-3-000	Various	Unidentified Registered Entities	25	\$0	6.8	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
1/31/2013	NP13-22-000	WECC	Unidentified Registered Entity	1	\$115,000	6.7	2019-0030		View NOP >>	View Order >>		S
1/31/2013	NP13-23-000	Various	Unidentified Registered Entities	22	\$73,000	6.7	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	S
1/31/2013	RC13-5-000	Various	Unidentified Registered Entities	22	\$0	6.7	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
2/28/2013	NP13-24-000	WECC	Unidentified Registered Entity	3	\$151,500	6.7	2019-0030		View NOP >>	View Order >>		S
2/28/2013	NP13-27-000	Various	Unidentified Registered Entities	14	\$53,000	6.7	2019-0030		View Filing >>			Both
2/28/2013	RC13-6-000	Various	Unidentified Registered Entities	27	\$0	6.7	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
3/27/2013	NP13-30-000	RFC	Unidentified Registered Entity	3	\$120,000	6.6	2019-0030		View NOP >>		View Errata>>	S
3/27/2013	NP13-28-000	Various	Unidentified Registered Entity	1	\$90,000	6.6	2019-0030		View NOP >>	View Order >>		S
3/27/2013	NP13-29-000	Various	Unidentified Registered Entities	10	\$80,000	6.6	2019-0030		View Filing >>			S
4/30/2013	NP13-32-000	NERC	Unidentified Registered Entity	1	\$40,000	6.5	2019-0030		View NOP >>	View Order >>		S
4/30/2013	NP13-33-000	Various	Unidentified Registered Entities	18	\$315,250	6.5	2019-0030		View Filing >>			Both
4/30/2013	RC13-8-000	Various	Unidentified Registered Entities	50	\$0	6.5	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
5/30/2013	NP13-34-000	Texas RE	Unidentified Registered Entity	1	\$137,000	6.4	2019-0030		View NOP >>			S
5/30/2013	NP13-38-000	WECC	Unidentified Registered Entity	1	\$291,000	6.4	2019-0030		View NOP >>			S

"Unidentified Registered Entity" Dockets

Date	FERC Docket Number	Region	Registered Entity	Entities	Total Penalty (\$)	Years	FOIA	Disclosed=Y Denied=N	NOP	Order	A2 Spreadsheet	Disp
5/30/2013	NP13-39-000	Various	Unidentified Registered Entities	16	\$67,500	6.4	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	S
5/30/2013	RC13-9-000	Various	Unidentified Registered Entities	53	\$0	6.4	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
6/27/2013	NP13-41-000	Various	Unidentified Registered Entities	20	\$198,000	6.3	2019-0030		View Filing >>	View Order >>	View A-2 Spreadsheet >>	Both
6/27/2013	RC13-10-000	Various	Unidentified Registered Entities	52	\$0	6.3	2019-0030		View Filing >>		View A-2 Spreadsheet >>	FFT
7/31/2013	NP13-45-000	WECC	Unidentified Registered Entity	1	\$198,000	6.2	2019-0030		View NOP >>	View Order>>		S
7/31/2013	NP13-46-000	Various	Unidentified Registered Entities	18	\$112,000	6.2	2019-0030		View Filing >>	View Order>>	View A-2 Spreadsheet >>	Both
7/31/2013	NP13-47-000	RFC, SERC	Unidentified Registered Entities	2	\$350,000	6.2	2019-0030		View NOP >>	View Order>>		S
8/30/2013	NP13-51-000	Various	Unidentified Registered Entities	18	\$98,000	6.2	2019-0030		View Filing >>	View Order>>		Both
9/30/2013	NP13-55-000	WECC	Unidentified Registered Entity	1	\$150,000	6.1	2019-0030		View NOP>>	View Order>>		S
9/30/2013	NP13-57-000	Various	Unidentified Registered Entities	12	\$189,000	6.1	2019-0030		View Filing >>	View Order>>	View A-2 Spreadsheet >>	S
10/30/2013	NP14-4-000	RF, SERC	Unidentified Registered Entities	16	\$55,000	6.0	2019-0030		View Filing >>	View Order>>	View A-2 Spreadsheet >>	S
10/30/2013	NP14-5-000	RFC	Unidentified Registered Entity	1	\$0	6.0	2019-0030		View NOP>>	View Order>>		S
11/27/2013	NP14-6-000	Various	Unidentified Registered Entities	14	\$142,000	5.9	2019-0030		View Filing >>	View Order>>	View A-2 Spreadsheet >>	S
12/30/2013	NP14-14-000	Various	Unidentified Registered Entities	18	\$276,500	5.8	2019-0030		View Filing >>	View Order>>	View A-2 Spreadsheet >>	Both
12/30/2013	NP14-16-000	SERC	Unidentified Registered Entity	1	\$50,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/30/2013	NP14-17-000	WECC	Unidentified Registered Entity	1	\$144,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/30/2013	NP14-18-000	SERC	Unidentified Registered Entity	1	\$110,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/30/2013	NP14-19-000	WECC	Unidentified Registered Entity	1	\$185,000	5.8	2019-0030		View NOP>>	View Order>>	View Errata>>	S
12/30/2013	NP14-20-000	SERC	Unidentified Registered Entity	1	\$198,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/30/2013	NP14-22-000	WECC	Unidentified Registered Entity	1	\$150,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/31/2013	NP14-21-000	SERC	Unidentified Registered Entity	1	\$175,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/31/2013	NP14-23-000	SPP RE	Unidentified Registered Entity	1	\$100,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/31/2013	NP14-24-000	SERC	Unidentified Registered Entity	1	\$350,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/31/2013	NP14-25-000	SERC	Unidentified Registered Entity	1	\$250,000	5.8	2019-0030		View NOP>>	View Order>>		S
12/31/2013	NP14-26-000	SERC	Unidentified Registered Entity	1	\$120,000	5.8	2019-0030		View NOP>>	View Order>>		S
1/30/2014	NP14-29-000	WECC	Unidentified Registered Entity	1	\$109,000	5.7	2019-0019		View NOP	View Order		
5/29/2014	NP14-42-000	SERC	Unidentified Registered Entity	1	\$250,000	5.4	2019-0019		View NOP	View Order		
7/31/2014	NP14-45-000	WECC	Unidentified Registered Entity	1	\$180,000	5.2	2019-0019		View Filing	View Order		
7/31/2014	NP14-46-000	RFC	Unidentified Registered Entities	7	\$50,000	5.2	2019-0019		View Filing	View Order		
8/27/2014	NP14-48-000	RFC/NPCC	Unidentified Registered Entities	3	\$625,000	5.2	2019-0019		View Filing	View Order		
10/30/2014	NP15-5-000	SPP	Unidentified Registered Entity	1	\$45,000	5.0	2019-0019		View Filing	View Order		
10/30/2014	NP15-6-000	TRE	Unidentified Registered Entity	1	\$106,000	5.0	2019-0019		View Filing	View Order		
11/25/2014	NP15-10-000	WECC	Unidentified Registered Entity	1	\$150,000	4.9	2019-0019		View Filing	View Order		
11/25/2014	NP15-11-000	RFC	Unidentified Registered Entity	1	\$75,000	4.9	2019-0019		View Filing	View Order		
11/25/2014	NP15-9-000	MRO	Unidentified Registered Entity	1	\$150,000	4.9	2019-0019		View Filing	View Order		
12/30/2014	NP15-13-000	RFC	Unidentified Registered Entity	1	\$0	4.8	2019-0019		View Filing	View Order		
12/30/2014	NP15-15-000	SERC	Unidentified Registered Entities	2	\$120,000	4.8	2019-0019		View Filing	View Order		
12/30/2014	NP15-17-000	WECC	Unidentified Registered Entity	1	\$120,000	4.8	2019-0019		View Filing	View Order		
12/30/2014	NP15-18-000	Multiple	Unidentified Registered Entities	10	\$124,000	4.8	2019-0019		View Filing	View Order	View A-2 Spreadsheet	
2/26/2015	NP15-20-000	SERC	Unidentified Registered Entity	1	\$70,000	4.7	2019-0019		View Filing	View Order		
3/31/2015	NP15-23-000	WECC	Unidentified Registered Entities	3	\$165,000	4.6	2019-0019		View Filing	View Order	View A-2 Spreadsheet	
4/30/2015	NP15-24-000	RFC	Unidentified Registered Entity	1	\$150,000	4.5	2019-0019		View Filing	View Order		
4/30/2015	NP15-26-000	RFC	Unidentified Registered Entity	1	\$0	4.5	2019-0019		View Filing	View Order		
8/31/2015	NP15-33-000	RFC	Unidentified Registered Entity	1	\$425,000	4.2	2019-0019		View Filing	View Order		
10/29/2015	NP16-2-000	WECC	Unidentified Registered Entity	1	\$160,000	4.0	2019-0019		View Filing	View Order		
12/1/2015	NP16-4-000	WECC	Unidentified Registered Entity	1	\$205,000	3.9	2019-0019		View Filing	View Order		
12/1/2015	NP16-5-000	WECC	Unidentified Registered Entity	1	\$200,000	3.9	2019-0019		View Filing	View Order		
12/30/2015	NP16-7-000	SPP	Unidentified Registered Entity	1	\$235,000	3.8	2019-0019		View Filing	View Order		
1/28/2016	NP16-10-000	RF	Unidentified Registered Entity	1	\$150,000	3.7	2019-0019		View Filing	View Order		
1/28/2016	NP16-9-000	WECC	Unidentified Registered Entity	1	\$0	3.7	2019-0019		View Filing	View Order		
2/29/2016	NP16-12-000	RF	Unidentified Registered Entity	1	\$1,700,000	3.7	2019-0019		View Filing	View Order		
4/28/2016	NP16-18-000	RF / SERC	Unidentified Registered Entities	5	\$115,000	3.5	2019-0019		View Filing	View Order	View A-2 Spreadsheet	
5/31/2016	NP16-20-000	FRCC	Unidentified Registered Entity	1	\$35,000	3.4	2019-0019		View Filing	View Order	View A-2 Spreadsheet	
7/28/2016	NP16-23-000	SERC	Unidentified Registered Entity	1	\$225,000	3.2	2019-0019		View Filing	View Order		
7/28/2016	NP16-24-000	SERC	Unidentified Registered Entity	1	\$180,000	3.2	2019-0019		View Filing	View Order		
10/31/2016	NP17-2-000	WECC	Unidentified Registered Entity	1	\$1,125,000	3.0	2019-0019		View Filing	View Order		
10/31/2016	NP17-3-000	WECC	Unidentified Registered Entity	1	\$250,000	3.0	2019-0019		View Filing	View Order		

"Unidentified Registered Entity" Dockets

Date	FERC Docket Number	Region	Registered Entity	Entities	Total Penalty (\$)	Years	FOIA	Disclosed=Y Denied=N	NOP	Order	A2 Spreadsheet	Disp
11/30/2016	NP17-8-000	MRO	Unidentified Registered Entity	1	\$142,000	2.9	2019-0019		View Filing	View Order		
12/29/2016	NP17-10-000	WECC	Unidentified Registered Entity	1	\$0	2.8	2019-0019		View Filing	View Order		
12/29/2016	NP17-11-000	WECC	Unidentified Registered Entity	1	\$0	2.8	2019-0019		View Filing	View Order		
12/29/2016	NP17-12-000	WECC/SERC	Unidentified Registered Entities	4	\$60,000	2.8	2019-0019		View Filing	View Order	View A-2 Spreadsheet	
12/29/2016	NP17-13-000	WECC	Unidentified Registered Entity	1	\$0	2.8	2019-0019		View Filing	View Notice		
4/27/2017	NP17-21-000	WECC	Unidentified Registered Entity	1	\$201,000	2.5	2019-0019		View Filing	View Notice		
7/31/2017	NP17-25-000	WECC	Unidentified Registered Entity	1	\$0	2.2	2019-0019		View Filing	View Notice	View A-2	
7/31/2017	NP17-26-000	SPP RE	Unidentified Registered Entity	1	\$250,000	2.2	2019-0019		View Filing	View Notice		
9/28/2017	NP17-31-000	SERC	Unidentified Registered Entity	1	\$500,000	2.1	2019-0019		View Filing	View Notice		
10/31/2017	NP18-2-000	WECC	Unidentified Registered Entities	2	\$0	2.0	2019-0019		View Filing	View Notice	View A-2	
5/31/2018	NP18-14-000	RF	Unidentified Registered Entity	1	\$180,000	1.4	2019-0019		View Filing	View Notice		
5/31/2018	NP18-15-000	WECC	Unidentified Registered Entity	1	\$0	1.4	2019-0019		View Filing	View Notice	View A-2	
7/31/2018	NP18-21-000	WECC	Unidentified Registered Entity	1	\$0	1.2	2019-0019		View Filing	View Notice	View A-2	
8/30/2018	NP18-22-000	WECC	Unidentified Registered Entity	1	\$0	1.2	2019-0019		View Filing	View Notice		
9/27/2018	NP18-26-000	NPCC	Unidentified Registered Entity	1	\$0	1.1	2019-0019		View Filing	View Notice	View A-2	
1/25/2019	NP19-4-000	XXX	Unidentified Registered Entity	1	\$10,000,000	0.8	2019-0099		View Filing >>	View Notice >>		
2/28/2019	NP19-5-000	FRCC/SPP	Unidentified Registered Entities	3	\$0	0.7	2019-0099		View Filing >>	View Notice >>	View A-2	
3/28/2019	NP19-6-000	WECC	Unidentified Registered Entities	6	\$0	0.6	2019-0099		View Filing >>	View Notice >>	View A-2	
4/30/2019	NP19-7-000	WECC	Unidentified Registered Entity	1	\$0	0.5	2019-0099		View Filing >>	View Notice >>		
4/30/2019	NP19-9-000	FRCC	Unidentified Registered Entity	1	\$301,000	0.5	2019-0099		View Filing >>	View Notice >>		
5/30/2019	NP19-10-000	XXX	Unidentified Registered Entity	1	\$1,000,000	0.4	2019-0099		View Filing >>	View Notice >>		
5/30/2019	NP19-11-000	XXX	Unidentified Registered Entity	1	\$1,000,000	0.4	2019-0099		View Filing >>	View Notice >>	Part 2 >>	
6/26/2019	NP19-14-000	SERC	Unidentified Registered Entity	1	\$775,000	0.3	2019-0099		View Filing >>	View Notice >>	Part 2 >>	
6/27/2019	NP19-12-000	NPCC/WECC	Unidentified Registered Entities	2	\$87,000	0.3	2019-0099		View Filing >>	View Notice >>	View A-2	
7/31/2019	NP19-15-000	NPCC/WECC	Unidentified Registered Entities	2	\$164,000	0.2	2019-0099		View Filing		View A-2	
8/29/2019	NP19-16-000	WECC	Unidentified Registered Entity	1	\$2,100,000	0.2			View Filing			
8/29/2019	NP19-17-000	MRO	Unidentified Registered Entities	1	\$0	0.2			View Filing		View A-2	
9/26/2019	NP19-18-000	Texas RE	Unidentified Registered Entity	1	\$0	0.1			View Filing		View A-2	