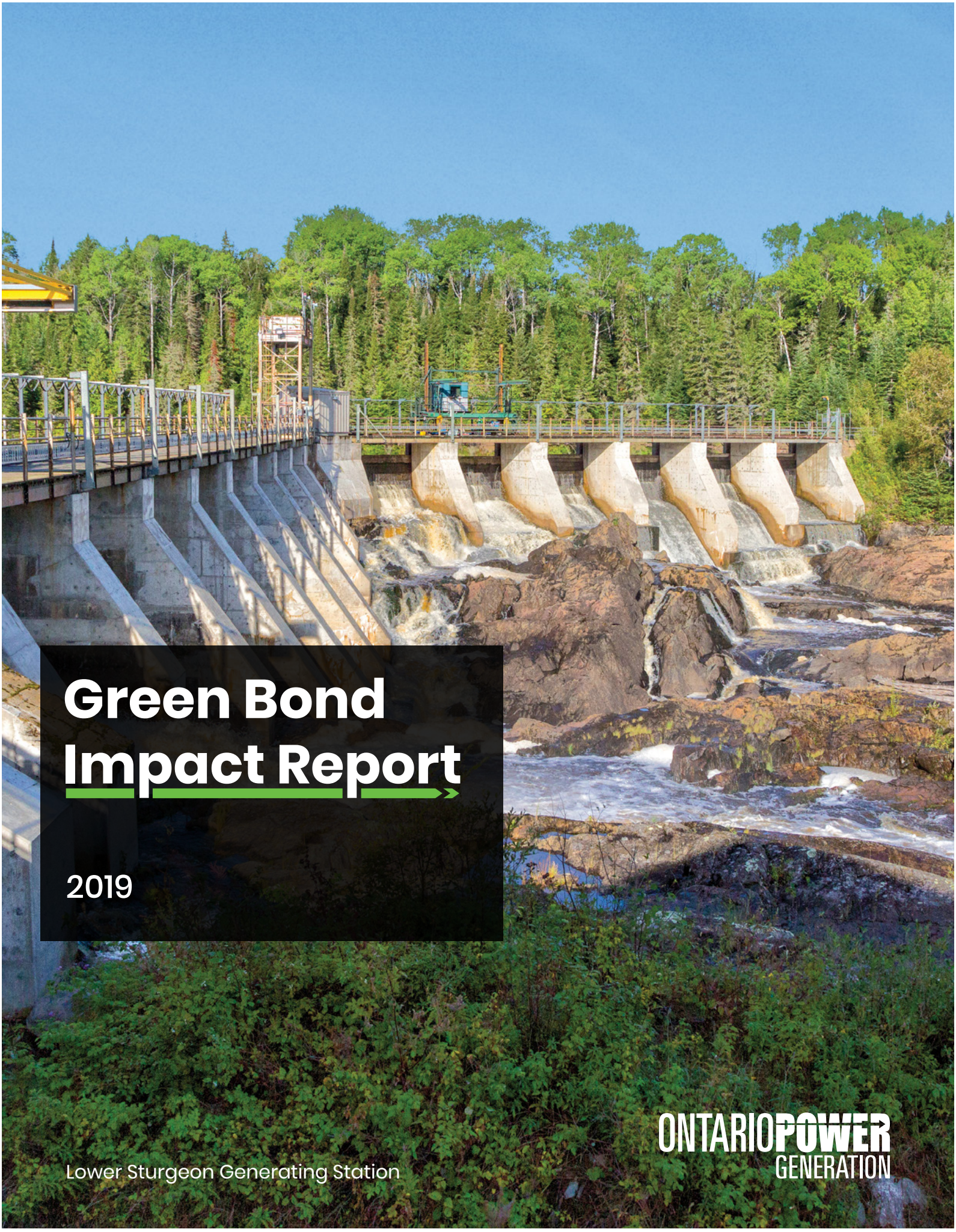


Green Bond Impact Report

2019

Lower Sturgeon Generating Station

ONTARIO POWER GENERATION

Corporate Profile

Ontario Power Generation is the largest clean energy generator in Ontario, Canada. As at March 31, 2019, Ontario Power Generation owned and operated two nuclear generating stations, 66 hydroelectric generating stations, two thermal generating stations, one wind power turbine and one solar facility in Ontario. Upon the acquisition of Eagle Creek Renewable Energy in 2018, Ontario Power Generation also owns and operates 64 hydroelectric generating stations and has minority shareholdings in 13 hydroelectric generating stations and two solar facilities in 13 states across the United States. In addition, Ontario Power Generation co-owns two gas-fired combined cycle generating stations (Portlands Energy Centre and Brighton Beach), both located in Ontario.

Including its share of the co-owned and minority-held facilities, as at March 31, 2019, Ontario Power Generation's total in- service generating capacity was 16,343 MW.

With a generation portfolio that is above 90% free of carbon and smog emissions, Ontario Power Generation is committed to sustainable operations and to be a leader in climate change mitigation. We believe reliable, clean power is fundamental to a healthy environment and a strong, low-carbon economy

Ontario Power Generation's Generating Station

2 Nuclear Generating Stations

66 Ontario Hydroelectric Generating Stations

2 Co-Owned Gas-Fired Stations

2 Thermal Generating Stations

1 Solar Station

64 U.S. Hydroelectric Generating Stations

Our Approach to Sustainability

Ontario Power Generation believes that operating in a sustainable manner is directly connected to business success. Sustainable development is a prerequisite for maintaining a social licence to operate, and it requires that impacts be identified and managed. Additionally, ensuring the best possible use of resources drives efficiency and innovation, which ultimately improves the company's return on investment. For these reasons, Ontario Power Generation has integrated sustainability requirements into its business model, risk management framework, policy requirements, and performance targets. For more information please refer to Ontario Power Generation's 2017 Sustainability Report available on www.OPG.com.

Green Bond Framework

Ontario Power Generation's green bonds are used to finance and/or refinance projects in renewable energy generation and to support the development of clean technologies. According to Sustainalytics' Second-Party Opinion, this framework aligns with the four core components of the Green Bond Principles issued by the International Capital Market Association in 2017.

Eligible Projects

Proceeds obtained from Ontario Power Generation's green bonds are used to finance and/or refinance a group of selected projects that offer tangible environmental benefits. Without limitation, Eligible Projects generally fall into the categories specified in the table below.

Renewable Energy Generation	
Investments that help supply energy from renewable sources	Solar Energy • Construction of new solar energy facilities. • Maintenance and/or refurbishment of existing solar energy facilities.
	Wind Energy • Construction of new wind energy facilities. • Maintenance and/or refurbishment of existing wind energy facilities.
	Hydroelectricity • Construction of new run-of-river hydroelectricity projects. • Refurbishment, modernization, and/or maintenance of existing hydroelectricity facilities with the purpose of increasing generation efficiency, operational life span and/or renewable energy output while maintaining or improving the level of operational safety.
Energy Efficiency and Management	
Investments that help reduce energy consumption or help manage and store energy	• Transportation efficiency/electrification. • Industrial efficiency. • Climate change and eco-efficient products, production technologies and processes.

OPG's green bonds can also be used to finance the acquisition, including minority equity participation, of Eligible Projects.

Look-back period: Ontario Power Generation is entitled to allocate funds to Eligible Projects up to 24 months prior to the date of the Green Bond issuance.

Exclusion criteria: Ontario Power Generation has developed exclusionary criteria for the Use of Proceeds, and is committed to not knowingly use proceeds for financing assets/projects that involve nuclear energy technology, equipment or infrastructure, or generation from fossil fuels.

Process of Project Evaluation and Selection

Ontario Power Generation's Green Bond Oversight Committee is made up of members of the senior management team, including its Chief Financial Officer, Chief Administrative Officer and President Renewable Generation. This Committee is responsible for the ultimate review and selection of the green projects that will qualify as Eligible Projects.

Projects are evaluated using financial and risk-based analyses as well as strategic considerations. Ontario Power Generation has formal risk management policies, procedures, and systems in place to identify, assess and mitigate risks to the Company. Ontario Power Generation's Code of Business Conduct Policy and Environmental Policy establish the Company's parameters for ethical behaviour and environmental management, respectively.

Management of Proceeds

Ontario Power Generation's green bond proceeds are held in a segregated account consisting of cash and/or short-term money market instruments.

As Eligible Projects require funding, the money will be released from the segregated account to offset the green funding commitments.

Transparency and Reporting

Allocation	Ontario Power Generation will update investors annually in regards to the use of proceeds and green bond program developments. The reports will include a list of major Eligible Projects to which green bond proceeds have been allocated, a brief description of the Eligible Projects, amounts allocated and the remaining balance of funds that have not yet been allocated.
Reporting	Where feasible, the report will include qualitative and quantitative environmental performance indicators (e.g. greenhouse gas emissions reduced/avoided, renewable energy generation, capacity of renewable energy plant constructed or rehabilitated).

Green Bond Offerings and Impact

In 2018, Ontario Power Generation issued its first green bond totaling $450 million. The proceeds of the green bond issuance have been used to finance eligible renewable generation projects under Ontario Power Generation's Green Bond Framework.

In early 2019, Ontario Power Generation issued its second round of green bonds, raising $500 million. The proceeds have been allocated mainly towards the November 2018 acquisition of Eagle Creek Renewable Energy, an operator based in the United States.

First Issuance (June, 2018)

In June 2018, Ontario Power Generation issued its inaugural green bond raising a total of $450 million ($447 million of net proceeds) from capital markets. The 30-year green bond represented a first-of-its-kind for the Canadian energy sector, had a coupon rate of 3.84% and received a BBB+ rating by S&P Global and an A (Low) rating by DBRS. Over two-thirds of the amounts issued were acquired by investors that are signatories to the United Nations Principles for Responsible Investment of which some investors had specific green mandates.

First Green Bond Offering Facts

$450
Size CAD (Millions)

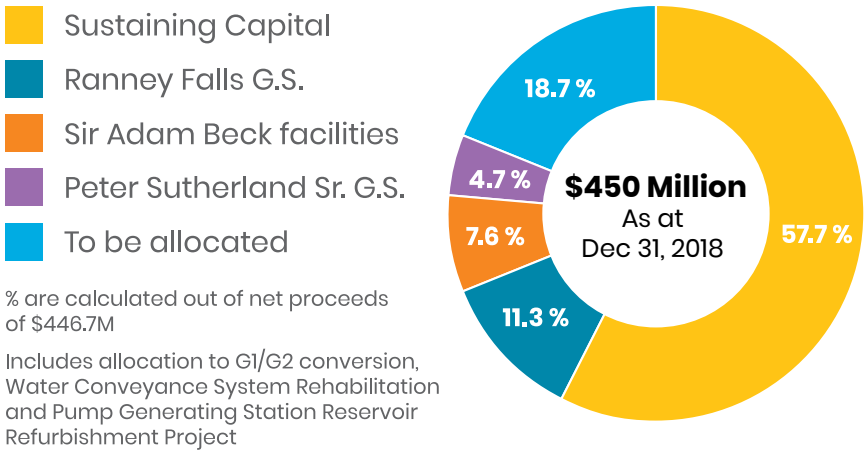
BBB+
Rating S&P

A (Low)
Rating DBRS

30
Term (Years)

3.84
Coupon (%)

Use of Net Proceeds



% are calculated out of net proceeds of $446.7M

Includes allocation to G1/G2 conversion, Water Conveyance System Rehabilitation and Pump Generating Station Reservoir Refurbishment Project

Approximately $363 million of the net proceeds was released from a segregated account, representing funds invested in eligible hydroelectric projects from the second half of 2016 up to the third quarter of 2018.

These allocations include capacity expansions and upgrades among other projects to our existing facilities.

Ranney Falls Generating Station

Ranney Falls Generating Station

The Ranney Falls Generating Station is located on the Trent River, a federal waterway, within the community of Campbellford in the Municipality of Trent Hills, Ontario.

Proceeds from Ontario Power Generation's first green bond offering will add 10 MW of generating capacity, increasing the total output to 20 MW.

The new unit will produce over 33 GWh annually and will displace about 8,995 metric tonnes of carbon dioxide upon completion. This is equivalent to 1,910 passenger cars taken off the road for a year. It is estimated that it will displace over 12,000 metric tonnes of carbon dioxide annually by 2030 as the generation supply mix changes in Ontario.

Sir Adam Beck Generating Stations

Sir Adam Beck Generating Stations

The Sir Adam Beck I Generating Station was opened by Sir Adam Beck on December 28, 1921. The 10-unit station has provided clean, renewable electricity to Ontario for nearly 100 years. In 1954, the 16-unit Sir Adam Beck II Generating Station was put in service, and in 1957, the Sir Adam Beck Pump Generating Station brought 6 additional units in service. The three generating stations have a combined capacity of 2,123 MW.

Approximately 8% of the net proceeds were allocated to three major projects including G1 and G2 unit conversions, Water Conveyance System Rehabilitation and Pump Generating Station Reservoir Refurbishment. There were also proceeds allocated to sustaining capital projects such as upgrades to Sir Adam Beck I, II and Pump Generating Stations in Niagara Falls (see Sustaining Capital section).

Peter Sutherland Sr. Generating Station

Peter Sutherland Sr. Generating Station

The Peter Sutherland Sr. Generating Station, located at New Post Creek, about 75 km north of Smooth Rock Falls, is a successful partnership between the Taykwa Tagamou Nation (TTN) and Ontario Power Generation.

Approximately 6% of the net proceeds were used to finance the 30 MW hydroelectric generating station, providing renewable, low-cost and reliable electricity to the provincial grid. The station generates over 100,000 MWh annually, enough to power 28,000 homes, and displaced over 17,000 metric tonnes of carbon dioxide in 2018 only. It is estimated that the station will displace more than 40,000 metric tonnes of carbon dioxide annually by 2030 as the generation supply mix changes in Ontario. This is equivalent to taking 8,500 passenger cars off the road every year.

Sustaining Capital

The largest portion of the net proceeds from Ontario Power Generation's first green bond issuance, about $258 million, was allocated towards financing over 150 capital projects, distributed across more than 40 of Ontario Power Generation's hydroelectric generating stations.

To support Ontario Power Generation's mission of providing low-cost power in a safe, clean, reliable and sustainable manner, a large amount of capital was channeled to modernization, asset life-extension, and operational-safety increase projects across a number of generation stations.

Approximately $143 million (50% of the allocations towards sustaining capital) were invested in eight major hydroelectric-generating assets across Ontario Power Generation's Northeast, Northwest, Eastern, and Niagara operations. These facilities, listed below, have provided clean and reliable energy to Ontarians for over 66 years on average, and have a combined in-service capacity of 2,457 MW.

Projects included in the top 50% of funds allocated towards sustaining capital.

Station	Allocations (millions $)	In Service Date	Years In Service	Capacity (MW)	# Units	Operations Group
DeCew II	33.69	1943	76	144	2	Niagara Operations
R.H Saunders	18.88	1958	61	1,045	16	Eastern Operations
Lower Notch	17.72	1971	48	274	2	Northeast Operations
Chenaux	16.27	1950	69	144	8	Eastern Operations
Sir Adam Beck Pump Generating Station (other sustaining capital)	15.50	1957	62	174	6	Niagara Operations
SIR ADAM BECK 1 (OTHER SUSTAINING CAPITAL)	14.49	1921	98	432	10	Niagara Operations
Barrett Chute	14.13	1942	77	176	4	Eastern Operations
Whitedog Falls	11.88	1958	61	68	3	Northwest Operations
Total	142.56			2,457		

These infrastructure investments allow Ontario Power Generation to maintain operational excellence of its clean, low-cost and reliable generation portfolio.

DeCew II GS

Chenaux GS

Lower Notch GS

Second Issuance (January, 2019)

In January 2019, Ontario Power Generation raised $500 million from capital markets with a successful second green bond issuance. The 30-year green bond had a coupon rate of 4.25% and received a BBB+ rating by S&P Global and an A (Low) rating by DBRS. Most of the net proceeds were allocated towards the acquisition of Eagle Creek Renewable Energy LLC, an operator of small waterpower generation facilities with presence in 13 states across the United States.

Second Green Bond Offering Facts

$500
Size CAD (Millions)

BBB+
Rating S&P

A (Low)
Rating DBRS

30
Term (Years)

4.25
Coupon (%)

Acquisition of Eagle Creek Renewable Energy

EAGLE CREEK
RENEWABLE ENERGY
— EXCELLENCE IN HYDRO —

Most of the net proceeds of Ontario Power Generation's second green bond issuance (95%) were allocated towards the acquisition of Eagle Creek Renewable Energy LCC (Eagle Creek) for US$298 million on November 27, 2018, and subsequent equity injection.

Eagle Creek is a hydropower platform that owns and operates 64 hydroelectric generating stations and has minority shareholdings in other 13 hydroelectric generating stations and two solar facilities in 13 states across the United States. The majority of the

facilities within Eagle Creek's fleet operate in the New England, Midwest and New York power market areas.

As at March 31, 2019, Eagle Creek's portfolio had an in-service capacity of approximately 235 MW, including its proportionate share of minority interests in certain facilities. Each year, Eagle Creek Renewable Energy powers over 115,000 homes and displaces approximately 675,000 metric tonnes of carbon dioxide from 64 wholly owned and operated facilities.

GHG Mitigation Calculation Methodology

The quantification of greenhouse gas mitigation for the increased generation in Ontario Power Generation's hydroelectric fleet is calculated using a computer based model that determines how much generation will be displaced from combined cycle gas turbine plants. Using the incremental annual generation profile from the increased hydroelectric capacity, the model determines when the combined cycle gas turbine plants will be displaced. When the incremental hydroelectric generation is displacing gas, the Ontario grid emission factor of 0.4 tonnes carbon dioxide/MWh is used to calculate the net greenhouse gas mitigation.

The annual greenhouse gas mitigation from Eagle Creek is calculated using the tool from the United States Environmental Protection Agency called the Avoided Emissions and Generation Tool. This tool splits the contiguous 48 states into 10 regions across the United States and assigns emission factors to the appropriate generating stations.

The relevant AVERT regions and related NERC subregions are:

- Northeast region includes NERC subregions NEWE (Northeast Power Coordinating Council/New England), NYUP (Northeast Power Coordinating Council/Upstate New York)
- Great Lakes / Mid-Atlantic region includes NERC subregions RFCM (Reliability First Corporation/Michigan), RFCW (Reliability First Corporation/West), RFCE (Reliability First Corporation/East)
- Upper Midwest region includes NERC subregions MROE (Midwest Reliability Organization/East), MROW (Midwest Reliability Organization/West), SRMW (SERC Reliability Corporation/MISO-Central)
- California region includes NERC subregion CAMX (Western Electric Coordinating Council/California)
- Rocky Mountains region includes NERC subregion RMPA (Western Electric Coordinating Council/Rockies)