



HELPING OUR MEMBERS WORK TOGETHER
TO KEEP THE LIGHTS ON... TODAY AND IN THE FUTURE.

Winter 2018-2019 Operations and Market Performance

10/18/2018

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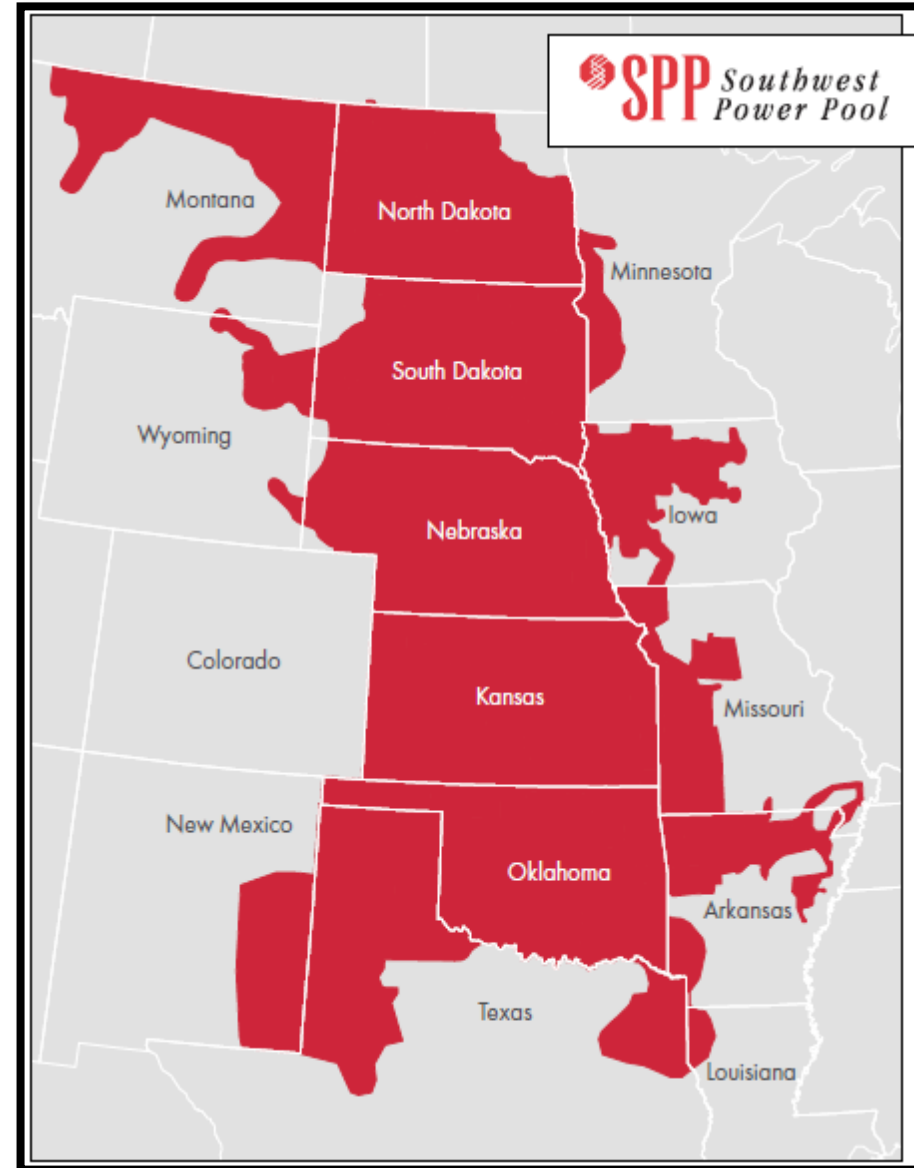
SPP Winter Operations

- SPP's Overview
- 2017/18 Highlights
- 2018/19 Preparedness
- Overall Assessment



SPP's Footprint

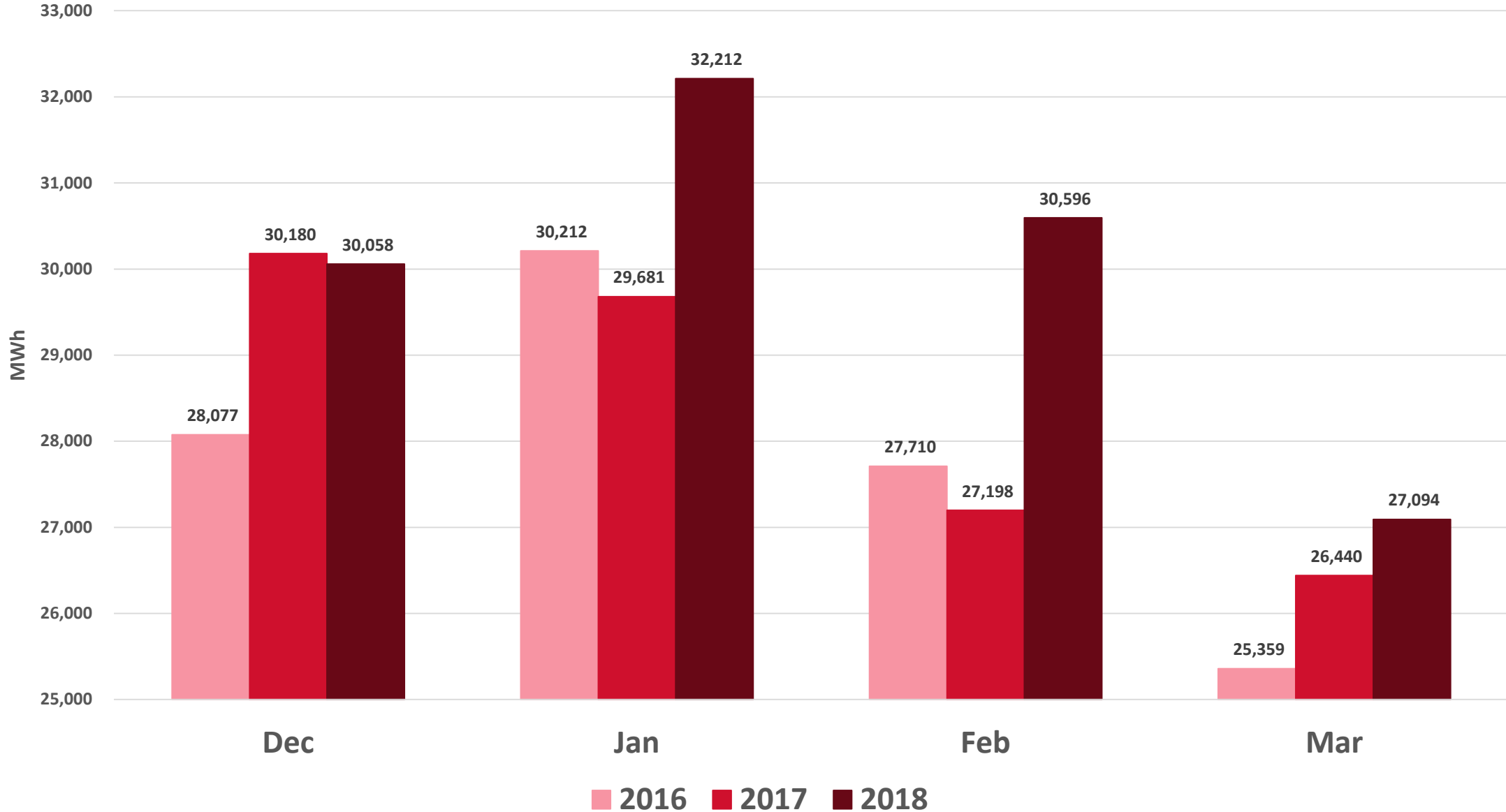
- Footprint extends Canada to Texas
- Summer Peak 50,622 MW
- Winter Peak 43,584 MW
- Diverse weather patterns due to geographic region
- 28.1% summer reserve margin (12% required)



2017/18 Winter Highlights

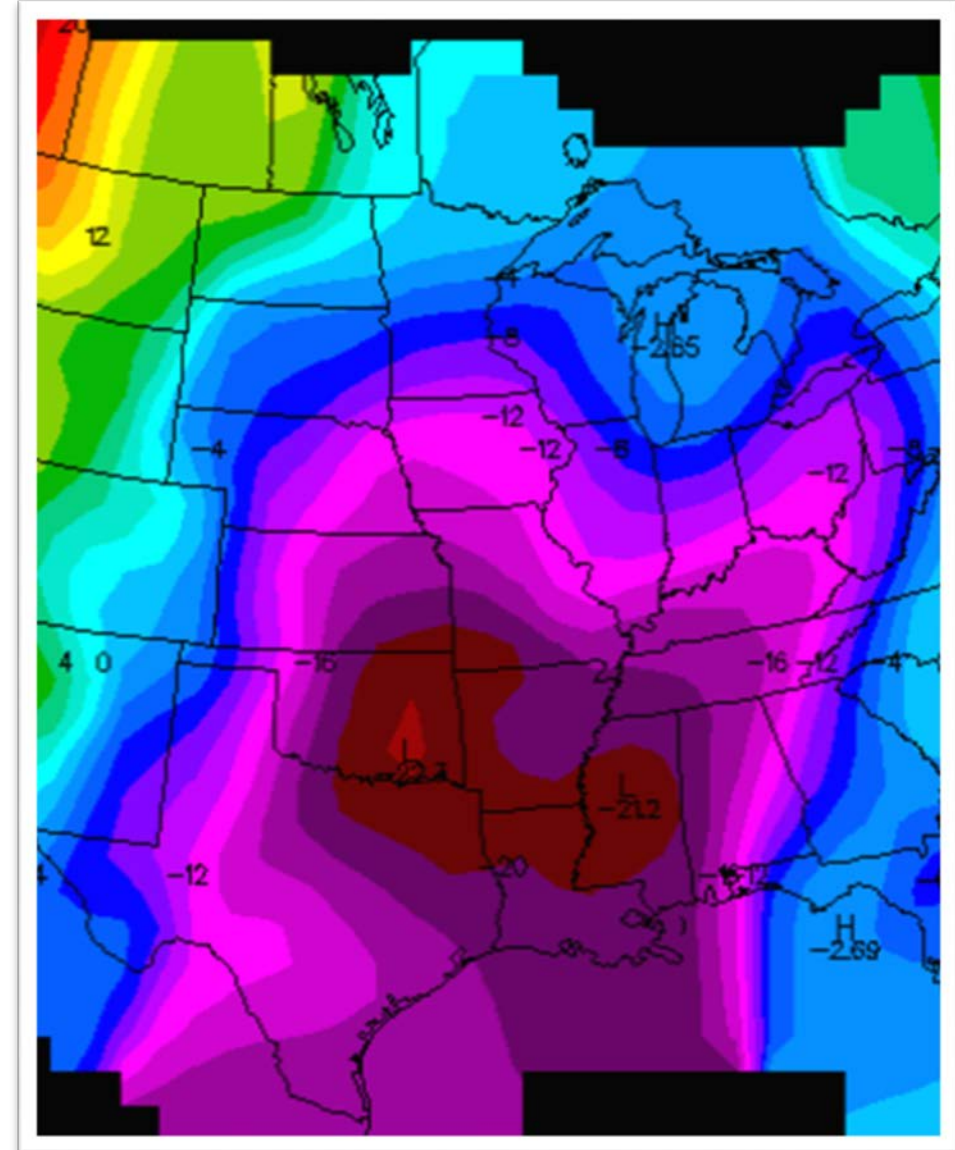
- New Winter Peaks
 - 1/2/2018 – 41,014 MW
 - 1/16/2018 – 42,710 MW
 - **1/17/2018 – 43,584 MW**
 - 3,150 MW increase from last year
- Total Energy Consumption Increase by 4.56 TWh
 - Up 5.5% over 2017/18 winter
 - Compared to 1.2% from 2016/17 to 2017/18 winter
- Wind variation biggest challenge
 - Wind Peak Record: 15,690 MW – 12/15/2017
 - Wind Penetration Record: 56.25% – 12/4/2017
 - Wind provided 27.12% of energy
 - MW Output Max-Min: 15,690 MW – 448 MW
- Extreme Weather Event – 1/17/2018
 - Regional Directional Transfer

SPP Hourly Average Energy Consumption By Winter Months

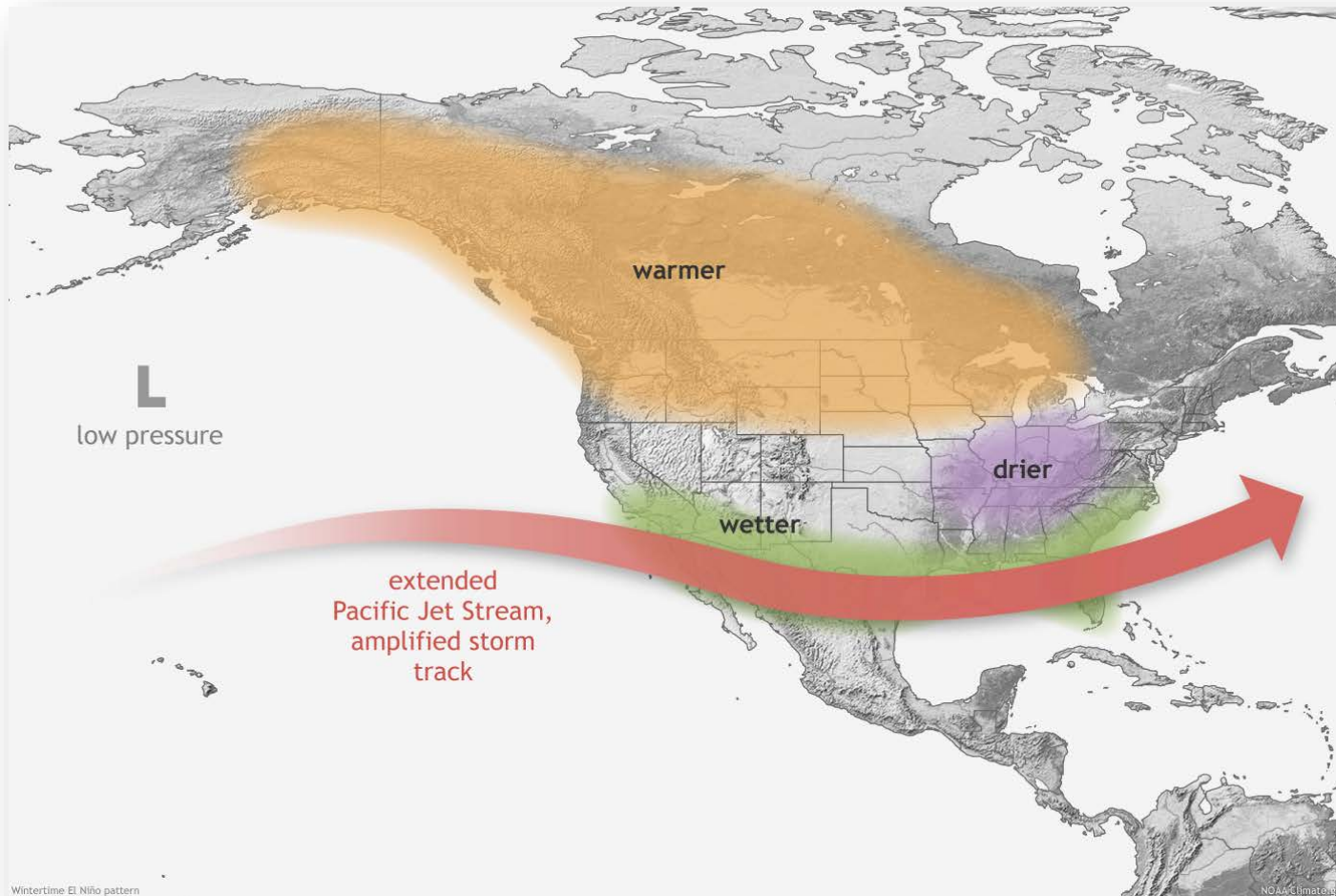


“The Big Chill” 1/17/2018

- Central & Southern US experienced abnormally cold weather
- Record winter loading for SPP
- High Wind
 - Between 6,116 – 13,087 MWs
- Transmission System Operating Limit (SOL) exceedances
- Heavy transfers of MISO flow across SPP transmission (North to South)



2018/19 NWS Winter Forecast



- 70% chance of El Niño
- Weak to Moderate
- Above average temperatures

2018/19 Winter Preparedness

- Hosted SPP Winter Prep workshop on October 2, 2018
- Attendees included members of the Balancing Authority Operating Committee (BAOC) and Operating Reliability Working Group (ORWG)
- Review of congestion patterns of 2017/18 winter and plans for upcoming winter.
- Review 2018 Winter assessment methodology
 - Projected winter peak - 41,500 MW
 - Projected energy increase - 5%
- Met with market participants and reviewed the Conservative Operations and weather alert process

2018/19 Winter Preparedness

- Winterization
 - SPP requires that each Generator Operators in its Balancing Authority Area take all precautions necessary to ensure SPP Balancing Authority Resources are readily available where possible, including the use of seasonal preparedness steps, such as winterization.
- Outage Coordination
 - If mitigations are unsuccessful in resolving the conflict, an outage request may need to be rescheduled or denied.
- Fuel Switching
 - Once the fuel switch occurs, the Generator Operator (or their designee) shall communicate with SPP any updates to its operational limits. These changes in operational limits must also be reflected correctly in the Markets UI/API. Any de-rates as a result of the fuel switching should be communicated through CROW.
- High Risk and Uncertainty Reports
 - SPP has developed a reports that provides visualization into contributors that may cause concerns up to 7 days out. If a threshold is exceeded, engineers will act accordingly to mitigate the concern.
 - Contributors: capacity, load and wind levels, wind drop, icing, weather, forecasts, etc.

High Risk and Uncertainty Reports

High Risk Days:

Legend	Normal	Slight	Moderate	High	New Alert Threshold
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Contributor	Wed, Sep-26-2018	Thu, Sep-27-2018	Fri, Sep-28-2018	Sat, Sep-29-2018	Sun, Sep-30-2018	Mon, Oct-01-2018	Tue, Oct-02-2018	Alert Threshold
10 MIN CAP	1815	1536	1902	2249	2344	2103	2077	500
1 HOUR CAP	3797	4226	5231	5839	5649	5044	5157	1000
HIGH LOAD	30117	30667	30576	28530	30490	33550	33439	44893
LOW LOAD	22926	22095	22312	22049	21687	22742	23569	20048
WIND	9497	8271	8417	11102	12163	12220	11963	15674
WIND PEN	38.12	33.06	36.09	45.61	48.94	52.32	48.06	63.76
WIND DROP	1415	279	604	609	235	268	215	3707
EST. WIND LOSS (ICE)	32	185	N/A	N/A	N/A	N/A	N/A	1000
345kV OUTAGES	16	17	16	11	9	13	14	38
230kV OUTAGES	28	31	27	21	19	26	27	56
WEATHER: NORTH	Lake Wind Advisory Frost Advisory	NA	NA	NA	NA	NA	NA	N/A
WEATHER: CENTRAL	Frost Advisory	NA	NA	NA	NA	NA	NA	N/A
WEATHER: SOUTH	NA	NA	NA	NA	NA	NA	NA	N/A

Uncertainty Risk:

Horizon	Wed, Sep-26-2018	Thu, Sep-27-2018	Fri, Sep-28-2018	Sat, Sep-29-2018	Sun, Sep-30-2018	Mon, Oct-01-2018	Tue, Oct-02-2018
One Hour	Low	High	Low	Low	Low	Moderate	Low
Four Hour	Low	Low	Low	Low	Low	Low	Low
Eight Hour	Low	Low	Low	Low	Low	Low	Low

Projects In Service April 1- September 25 2018



- Substation
- ▲ Device
- + Transformer
- New Line (115)
- New Line (138)
- New Line (345)
- Upgrade (69)
- Upgrade (115)
- Upgrade (138)
- Upgrade (345)

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Date Exported 9/26/2018 1 inch equals 117 miles

Overall 2018/19 Winter Assessment

- Forecasted for slightly lower winter peak load
- Generation Reserve Margins remain high
- Reliability Coordinator confirmed winter preparedness of Transmission Operators and Generation Operators
- Overall analysis indicates SPP is prepared for 2018/19 winter season

Our Mission

Helping our members work together to
keep the lights on ...
today and in the future.