NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

2015 Winter Performance Update

James Merlo, Senior Director Reliability Risk Management

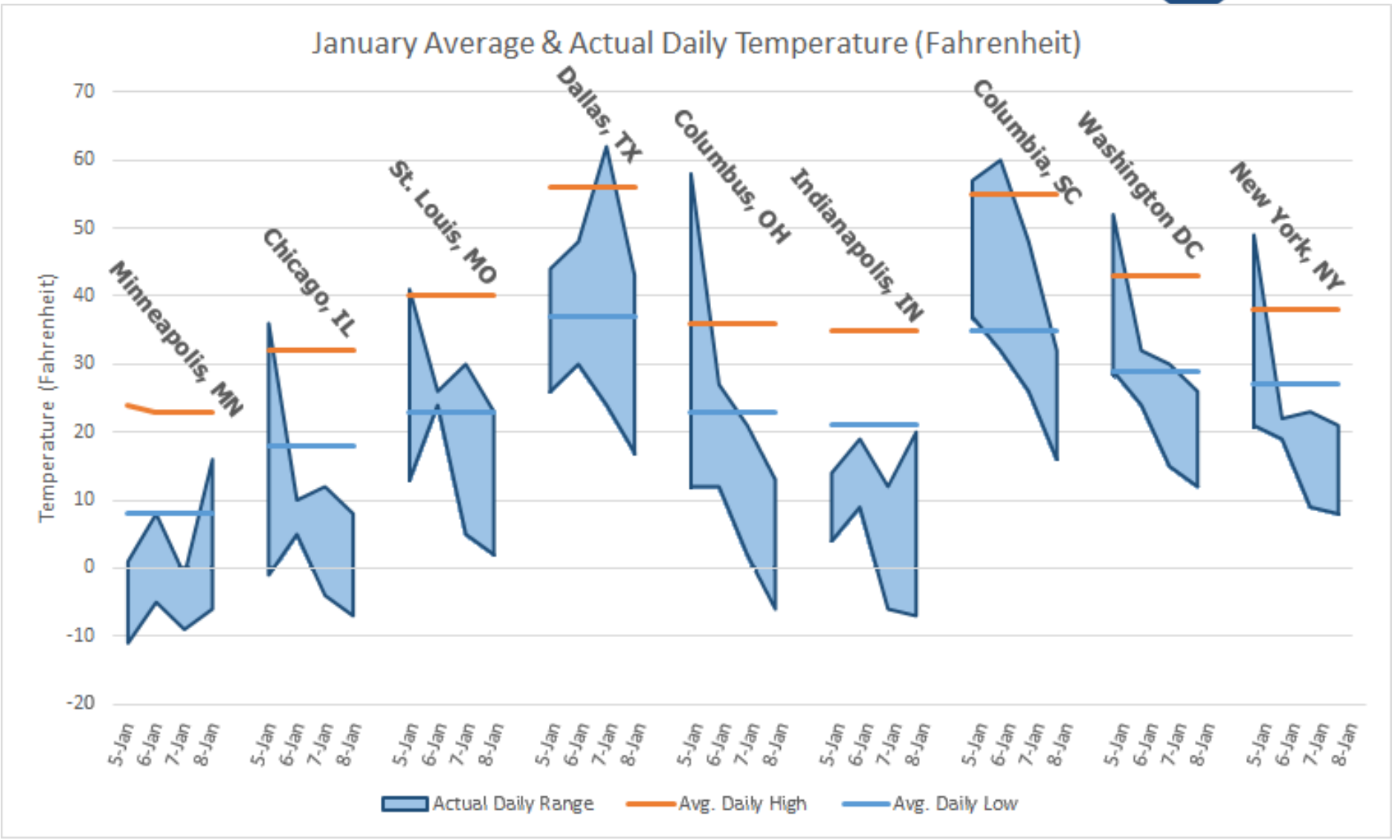
Member Representatives Committee Meeting

August 12, 2015

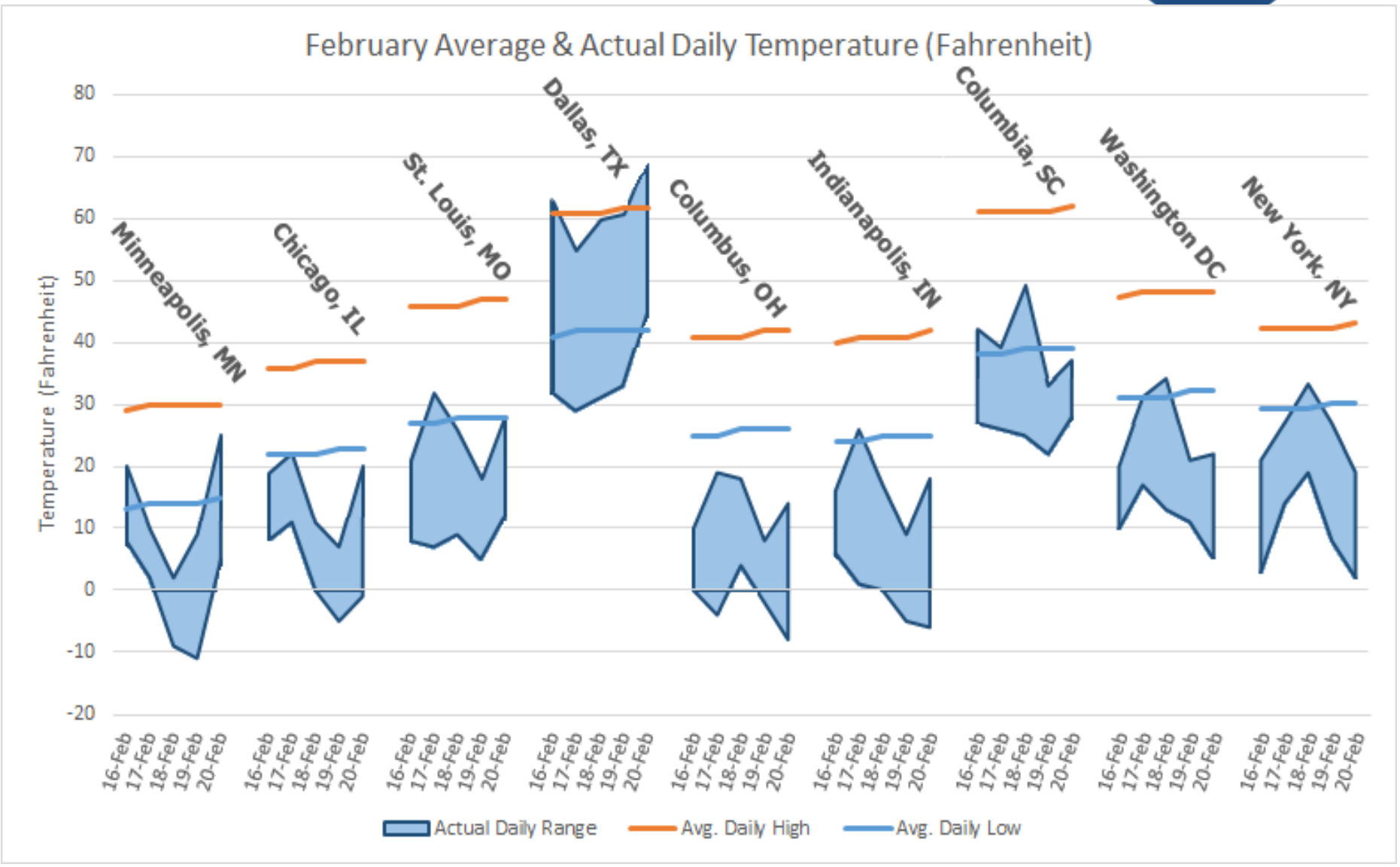
RELIABILITY | ACCOUNTABILITY




Deviation from Normal



Deviation from Normal



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New Winter Peak Loads

	MISO	PJM	NYISO	ISO-NE	South-eastern RC	TVA	VACS RC	SPP	ERCOT	FRCC
Previous Winter Peak (% of previous peak)	99,855	133,844	25,541	22,818	46,259	43,384	42,983	32,635	57,265	36,926
1/6/2014	109,307 (109.5%)	131,841 (98.5%)	23,197 (90.8%)	18,500 (81.1%)	44,871 (97.0%)	43,277 (99.8%)	50,659 (117.9%)	36,602 (112.2%)	56,031 (97.8%)	30,231 (81.9%)
1/7/2014	104,746 (104.9%)	141,846 (105.9%)	25,738 (100.8%)	21,300 (93.3%)	48,279 (104.4%)	44,285 (102.1%)	44654 (103.9%)	36,079 (110.6%)	57,277 (100.0%)	35,638 (96.5%)
1/8/2014	100,154 (100.3%)	134,021 (100.1%)	24,551 (96.1%)	20,800 (91.2%)	47,005 (101.6%)	39,820 (91.8%)	43,203 (100.5%)	37,944 (100.1%)	45,281 (79.1%)	29,251 (79.2%)

Value greater than previous peak

New all-time winter peak

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New Winter Peak Load Highlights

Table 4: Peak Load Values (MW)

	MISO	PJM	NYISO	ISO-NE	South-eastern RC	TVA	VACS RC	SPP	ERCOT	FRCC
2014 Polar Vortex Peaks	112,298	142,863*	25,738*	21,299*	48,279*	44,285*	50,659*	36,602*	57,277*	35,638*
1/7/2015	112,095	135,649	24,648	20,394	40,115	42,272	39,919	36,152	51,343	27,488
1/8/2015	113,525	136,185	24,327	20,567	47,502	43,646	44,921	36,995	56,750	30,701
2/19/2015	108,191	140,344	24,024	19,675	43,817	43,263	44,195	33,488	44,579	35,704
2/20/2015	104,135	143,086	23,245	19,574	43,941	41,090	47,340	31,456	35,821	42,947
All-Time Winter Peak	113,525	143,086	25,738*	22,818 **1/15/2004**	48,279*	44,285*	50,659*	36,995	57,277*	42,947
Peak Set in 2015	* Set during 2014 Polar Vortex									

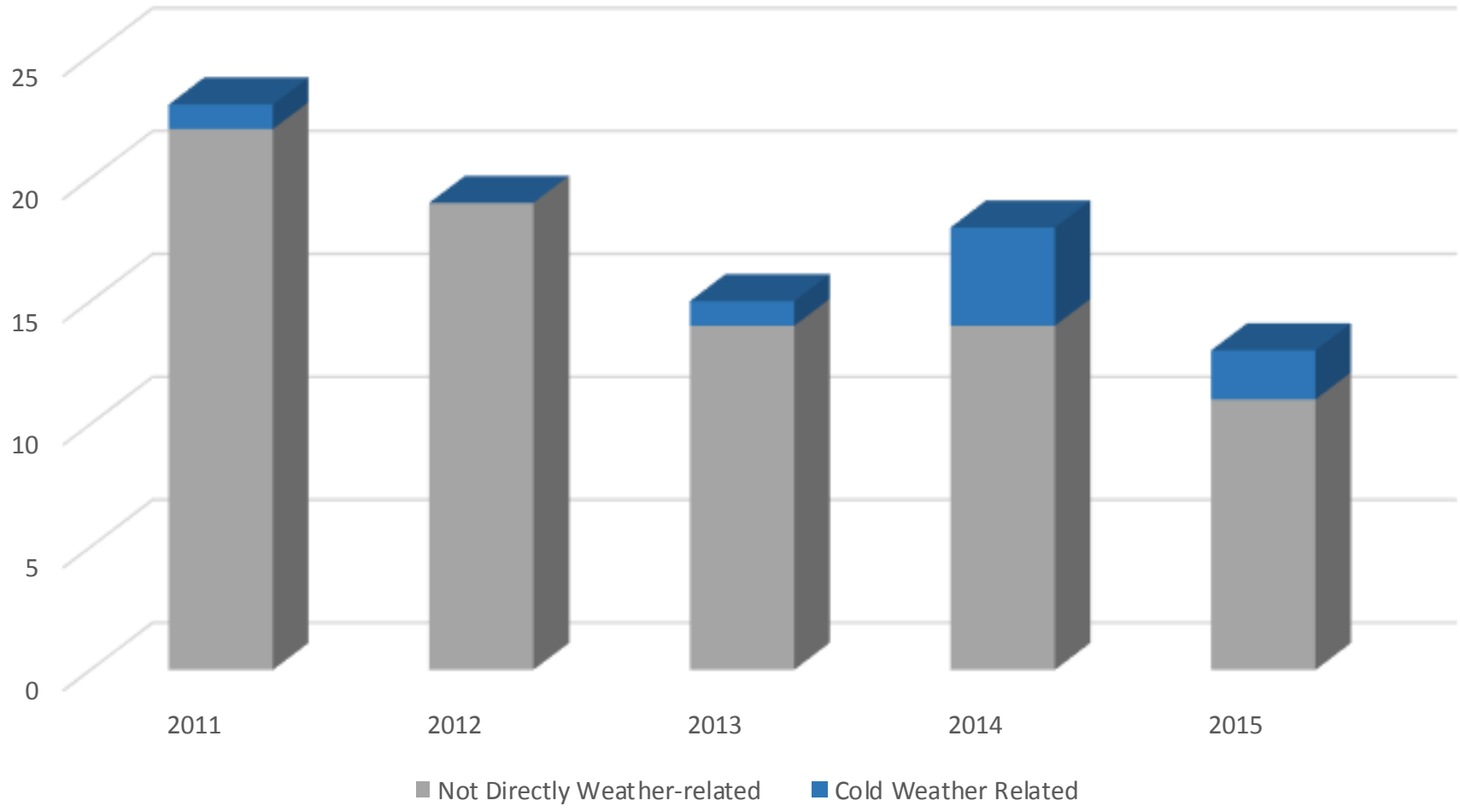
Generator Performance: Operational Actions

- Whenever possible, many generators would start on gas then switch to oil
- Owners started units earlier than expected helping to mitigate the risk of taking more time to start
- Keeping stations in service overnight, with a reduced output level, was beneficial

Generator Performance: Proactive Actions

- More testing of the plant and alternate fuel, if applicable, proved effective in proactively identify issues
- Proactive staffing of typically unmanned stations enabled more rapid response
- Many generation units participated in a pre-winter operational testing
  - Lower rate of forced outages

Winter Weather and Event Trends



Reference Materials

- Report on February 1-5, 2011 Southwest Cold Weather
- Polar Vortex Review
- Lessons Learned - Southwest Cold Weather Event
- Previous Cold Weather Event Analysis
- Reliability Guideline: Generating Unit Winter Weather Readiness
- Cold Weather Training Packet Refresher

Observations and Recommendations

- Winter 2015 showed overall reliability improvement
- Sustain industry winter weather preparedness
- Share lessons learned in both operations and maintenance
- Real-time gas-electric coordination continues to mature
- Industry and the ERO Enterprise continue to improve measurement and trending of severe weather impacts

Questions and Answers

New Winter Peak Loads

Table 4: Peak Load Values (MW)

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2014 Polar Vortex Peaks	112,298	142,863*	25,738*	21,299*	48,279*	44,285*	50,659*	36,602*	57,277*	35,638*
1/5/2015	97,767	119,791	23,003	19,172	32,670	33,491	32,223	34,492	52,230	28,082
1/6/2015	103,215	122,822	23,632	20,001	37,101	33,342	36,504	32,743	48,039	28,236
1/7/2015	112,095	135,649	24,648	20,394	40,115	42,272	39,919	36,152	51,343	27,488
1/8/2015	113,525	136,185	24,327	20,567	47,502	43,646	44,921	36,995	56,750	30,701
2/16/2015	102,145	134,142	23,754	20,095	32,442	35,099	38,798	31,752	47,284	25,724
2/17/2015	103,845	126,217	23,397	19,541	36,615	35,961	33,612	32,193	49,040	27,691
2/18/2015	105,293	127,087	22,839	18,811	40,679	38,541	37,611	33,145	48,233	28,889
2/19/2015	108,191	140,344	24,024	19,675	43,817	43,263	44,195	33,488	44,579	35,704
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7-Jan-14	104,746 (104.9%)	21,300 (93.3%)	25,738 (100.8%)	141,846 (105.9%)	36,079 (110.6%)	44,285 (102.1%)	44,654 (103.9%)	48,279 (104.4%)	57,277 (100.0%)	35,638 (96.5%)
8-Jan-14	100,154 (100.3%)	20,800 (91.2%)	24,551 (96.1%)	134,021 (100.1%)	31,944 (97.9%)	39,820 (91.8%)	43,203 (100.5%)	47,005 (101.6%)	45,281 (79.1%)	29,251 (79.2%)

New all-time winter peak