Vermont Weather Analytics Center

vermont electric power company

VELCO

October 20, 2016

VWAC Peak Load Reduction

- Provide advance notice of monthly VELCO and VDU peak loads, and ISO-NE yearly peak (i.e. residual demand)
- Data will include date/time, probability of occurrence, probability of being the peak, and the forecasted MWH load
- Used to enable VDUs to reduce peaks to minimize:
  - Capacity cost
  - Regional Network Service costs

Output of Peak load program

- The output signals will be made available through an Application Programming Interface (API)
- Also used to drive two additional information paths:
  - An email alert component that users can register with to receive peak alerts
  - A browser portal that users can log into to monitor the forecasts and peak alerts
- To support the forecast creation, input data sources will be collected on a continuous basis

IBM data stream

	Forecasted Date	Forecasted Time	VELCO forecasted load	VELCO peak probability for Month	VELCO confidence level	ISO-NE Forecasted load for Year	ISO peak probability	ISO confidence level
5 minute	10/17/2016	14:46	860	10%	99.8	15,222	4%	99.8
5 minute	10/17/2016	14:51	855	11%	99.7	15,333	22.0%	99.7
5 minute	10/17/2016	14:56	850	12%	99.6	15,866	22.5%	99.6
5 minute	10/17/2016	15:01	845	13%	99.8	16,183	22.6%	99.8
5 minute	10/17/2016	15:06	844	14%	99	16,507	22.7%	99
5 minute	10/17/2016	15:11	846	15%	98.8	16,837	22.8%	98.8
5 minute	10/17/2016	15:16	849	16%	99	17,174	22.9%	99
5 minute	10/17/2016	15:21	853	17%	92	17,517	23.0%	92
5 minute	10/17/2016	15:26	855	18%	95	17,868	22.0%	95
5 minute	10/17/2016	15:31	853	19%	96	18,225	5%	96
5 minute	10/17/2016	15:36	855	20%	96.5	18,590	10%	96.5
5 minute	10/17/2016	15:41	855	21%	97	18,961	11%	97
15 minute	10/17/2016	15:46	856	22%	96.8	18,700	12%	96.8
15 minute	10/17/2016	16:01	854	23%	99	18,600	13%	99
15 minute	10/17/2016	16:16	821	24%	98.9	18,556	15%	98.9
15 minute	10/17/2016	16:31	826	25%	99	18,927	55%	99
15 minute	10/17/2016	16:46	856	22%	96.8	18,700	12%	96.8
15 minute	10/17/2016	17:01	856	22%	96.8	18,700	12%	96.8
15 minute	10/17/2016	17:16	854	23%	99	18,600	13%	99
15 minute	10/17/2016	17:31	821	24%	98.9	18.556	15%	98.9

Performance Metrics for peak load (Draft)

Operational Objective	Technical Measurement	Performance Result	Economic Benefit	Societal Benefit
Peak management	• xxx% accuracy in predicting statewide peak hour on a daily/monthly basis • 24-hr lead time alerts with 5% MAE rate • Each month we will need to reconstitute the load from the VT DUs.	• 1% drop in Vermont peak (approx. 8 MW) • Demand response program efficiency (batting average metric to be defined by BED, GMP, VEC)	• $1M savings ($700K for VT + $300K for exceeding other NE states' reductions) • $250k annually in peak power purchase savings/ cost avoidance	• 0.6 tons of reduced CO_2 per MWh • Increased grid reliability • Reduced transmission build imperative • Improved customer engagement/ collaboration

*Extrapolating this capability to New England will yield an estimated $1.364M in annual fuel cost savings alone

Overall performance (so far)

- Great collaboration with all members.
- Program could save VT significant monies.
- Other states have peak reduction programs.