2021 Vermont Long Range Transmission Plan

vermont electric power company

VELCO

January 16th, 2020

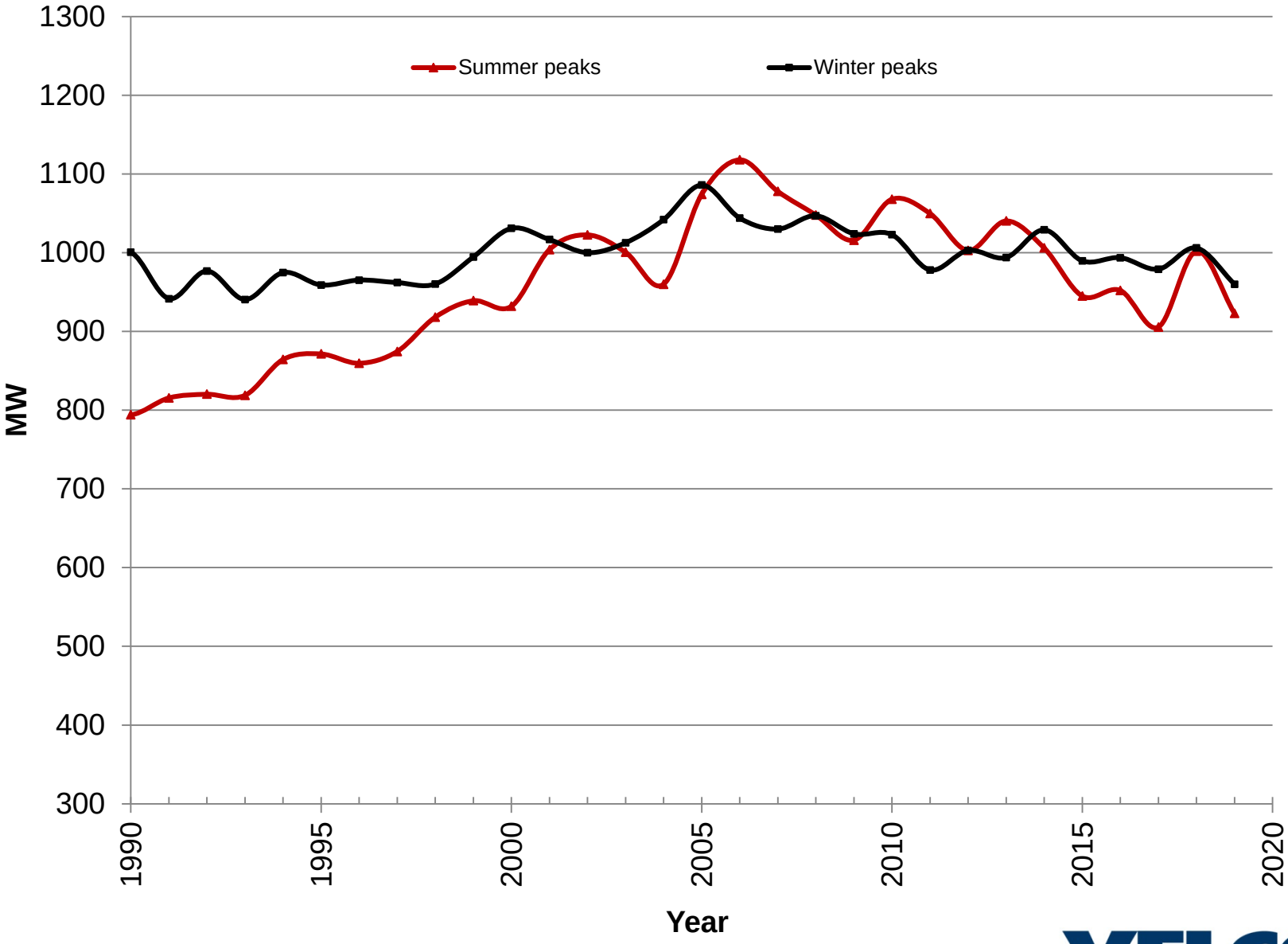
OC meeting

Long Range Plan development timeline

Activity	Timing
Prepare a load/renewable Load Forecast	November 2019 to June 2020
Review high level scope with the VSPC	April VSPC quarterly meeting
Prepare load flow cases and auxiliary files	May to June 2020
Consultation with distribution utilities	June 2020
Perform system analysis	July to November 2020
Identify deficiencies and develop solution options	July to October 2020
Engineering support (modeling data)	August 2020
Construction Controls support (Cost estimates)	September and October 2020
Prepare the draft report for VSPC review	November and December 2020
Obtain formal feedback from VSPC	January to March 2021
Incorporate VSPC comments	March 2021
Conduct public meetings for input to the report	April to May 2021
Incorporate comments from the public	June 2021
Publish Plan	June 2021 (on or before 7/1/21)

Historical Load Review

Vermont historical seasonal peak demand

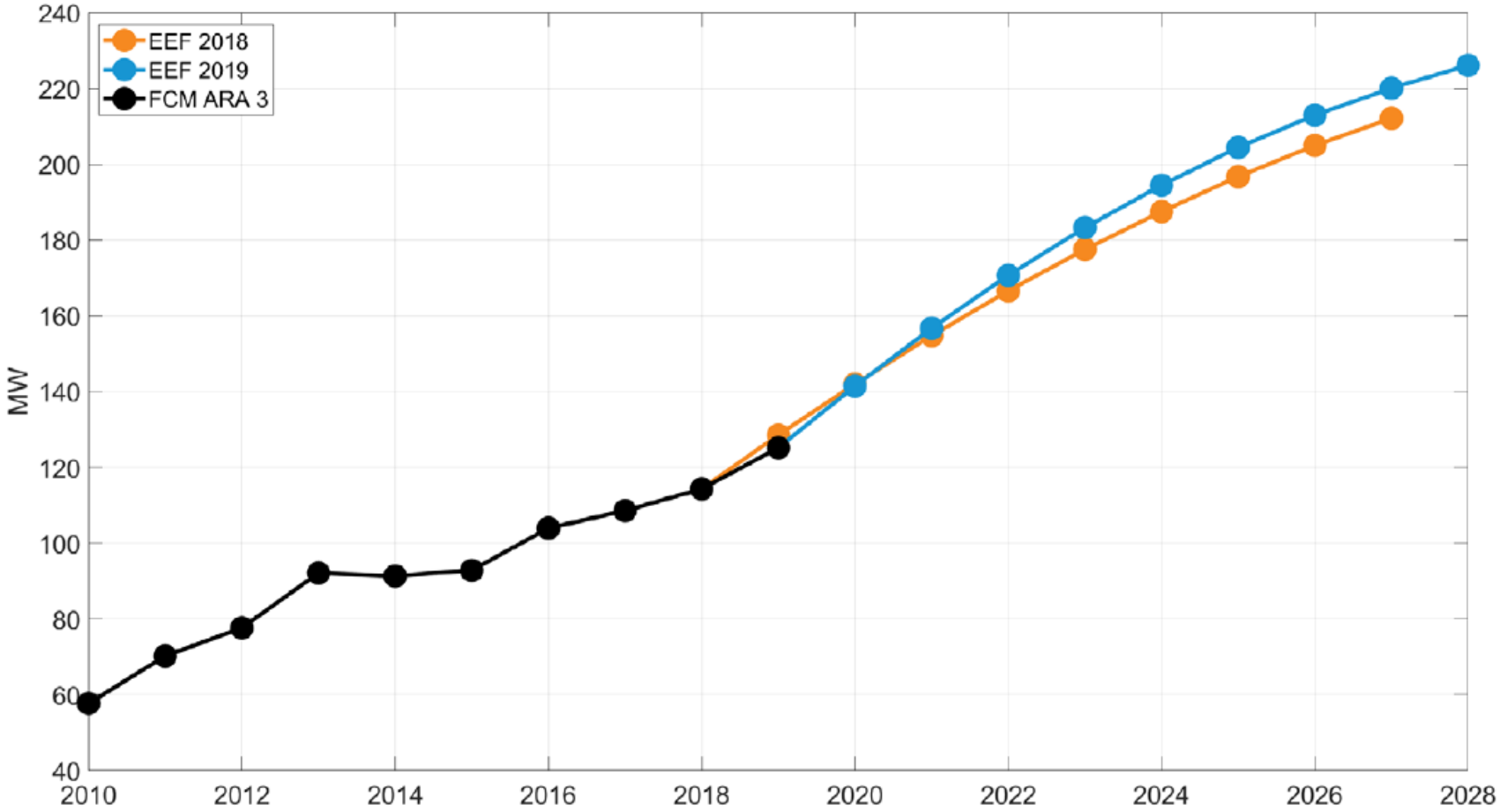


Efficiency Vermont's EE MW savings

Year	EE Measure direct cost ($M)	Winter peak MW savings	Summer peak MW savings
2000	$ 5.65	5.3	2.0
2001	$ 9.09	6.4	4.2
2002	$ 10.97	7.5	5.0
2003	$ 13.42	8.1	6.5
2004	$ 18.87	7.3	7.4
2005	$ 20.79	8.8	9.0
2006	$ 17.61	8.2	8.8
2007	$ 25.49	14.5	12.9
2008	$ 40.48	22.7	20.6
2009	$ 28.64	14.9	12.9
2010	$ 34.08	20.3	16.4
2011	$ 31.61	18.4	13.5
2012	$ 41.80	22.1	15.2
2013	$ 40.35	16.7	11.2
2014	$ 46.32	16.5	10.3
2015	$ 46.26	18.5	12.2
2016	$ 52.09	22.6	14.9
2017	$ 50.86	29.3	18.5
2018	$ 48.82	24.6	18.4

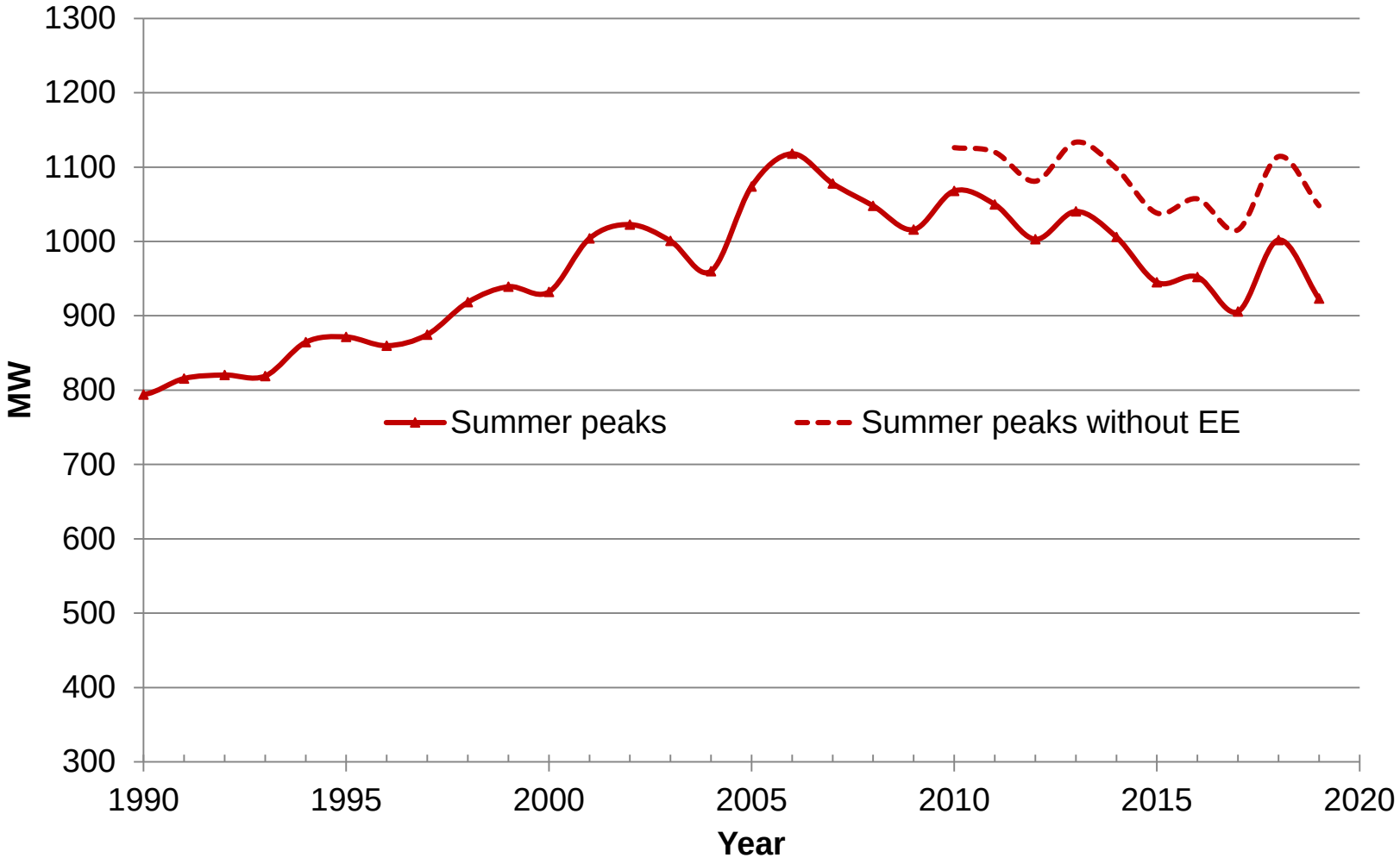
Vermont

Energy Efficiency on Summer Peak

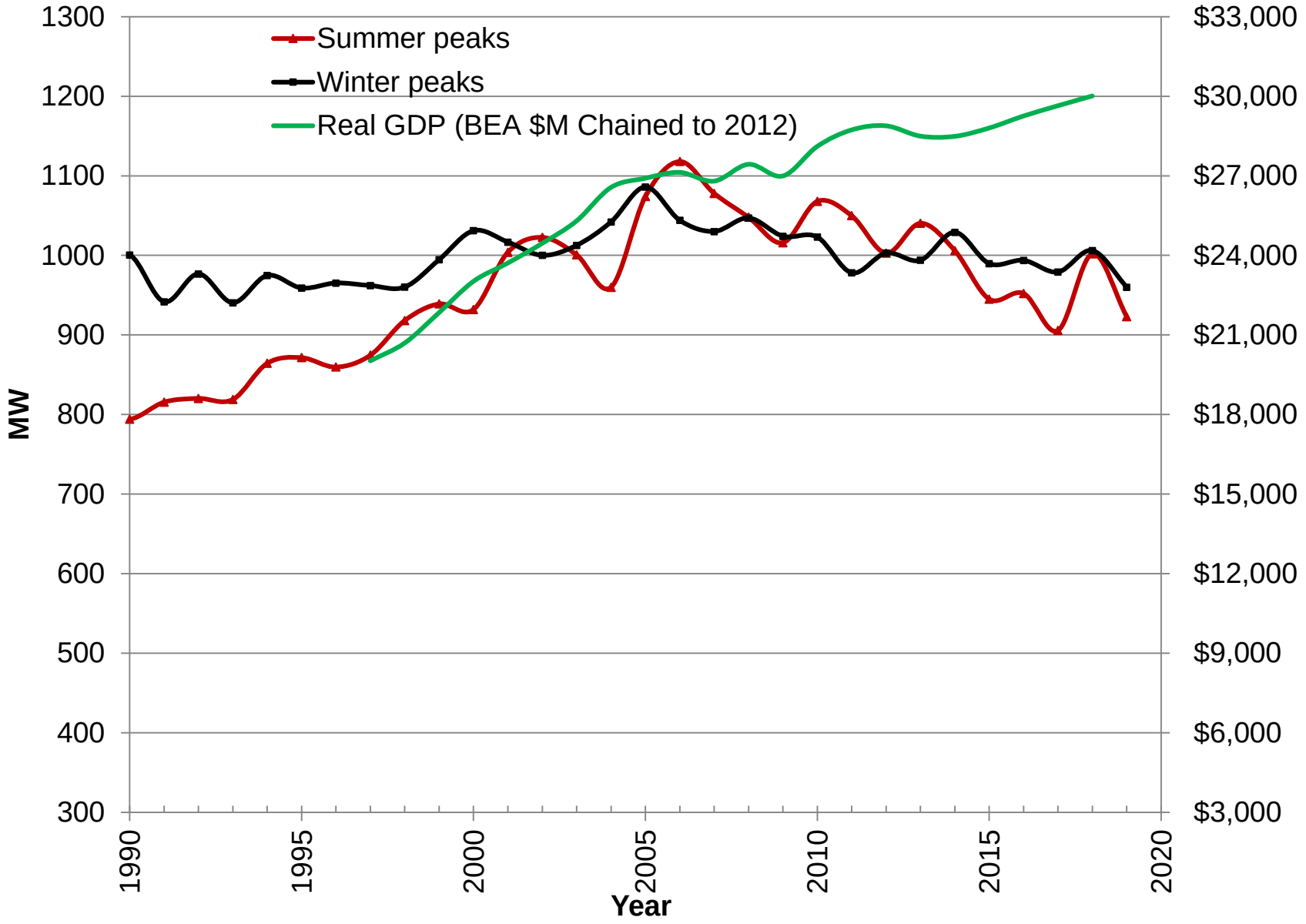


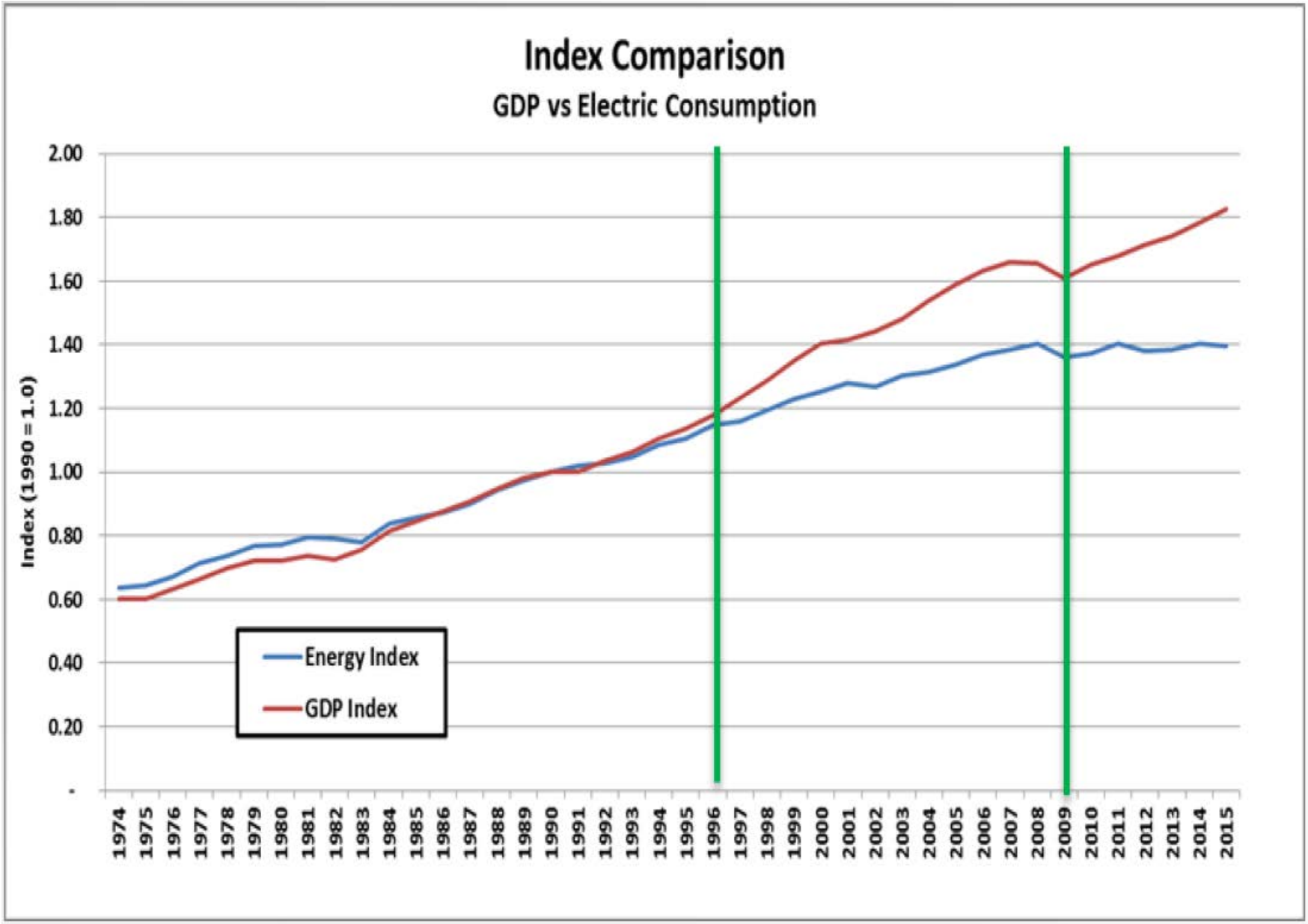
https://www.iso-ne.com/static-assets/documents/2019/04/eef2019_final_fcst.pdf

Vermont historical Summer peak demand and FCM EE effect



Vermont historical seasonal peak demand

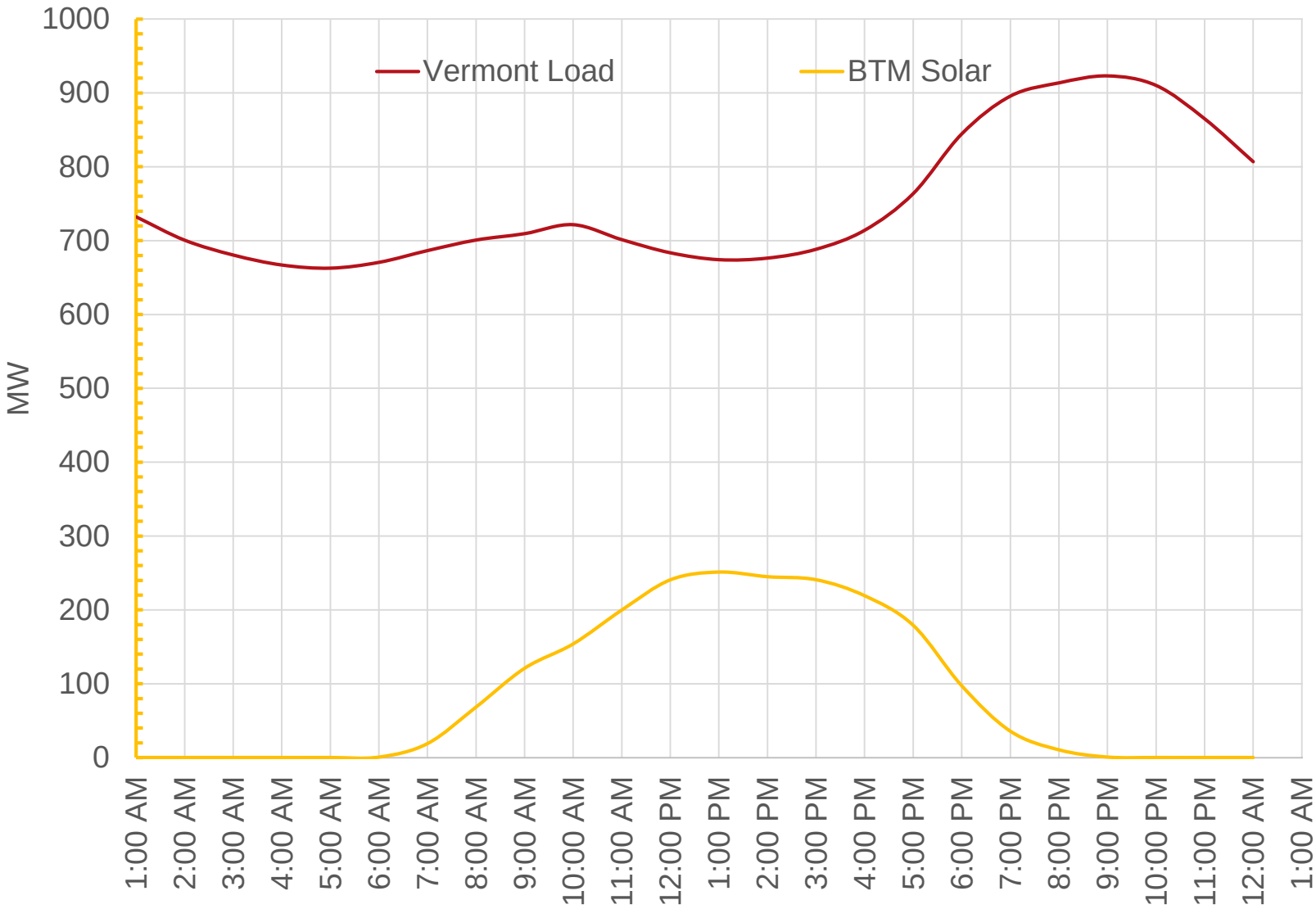




https://www.vermontspc.com/library/document/download/5619/VSPC_Itron_KickOff_Jan10_2017.pdf

2019 Summer Peak Review

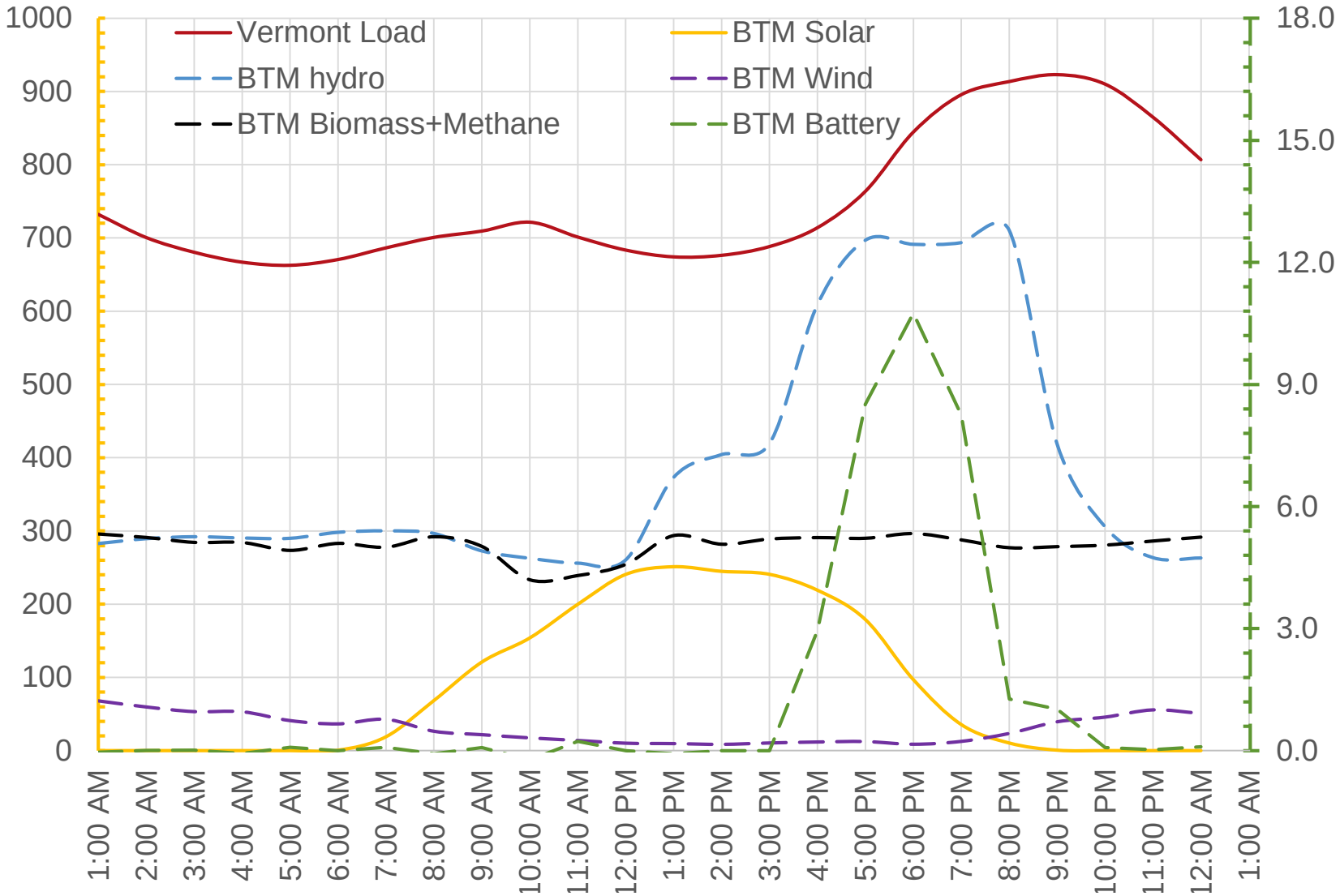
July 20, 2019 (Vermont Summer peak day)



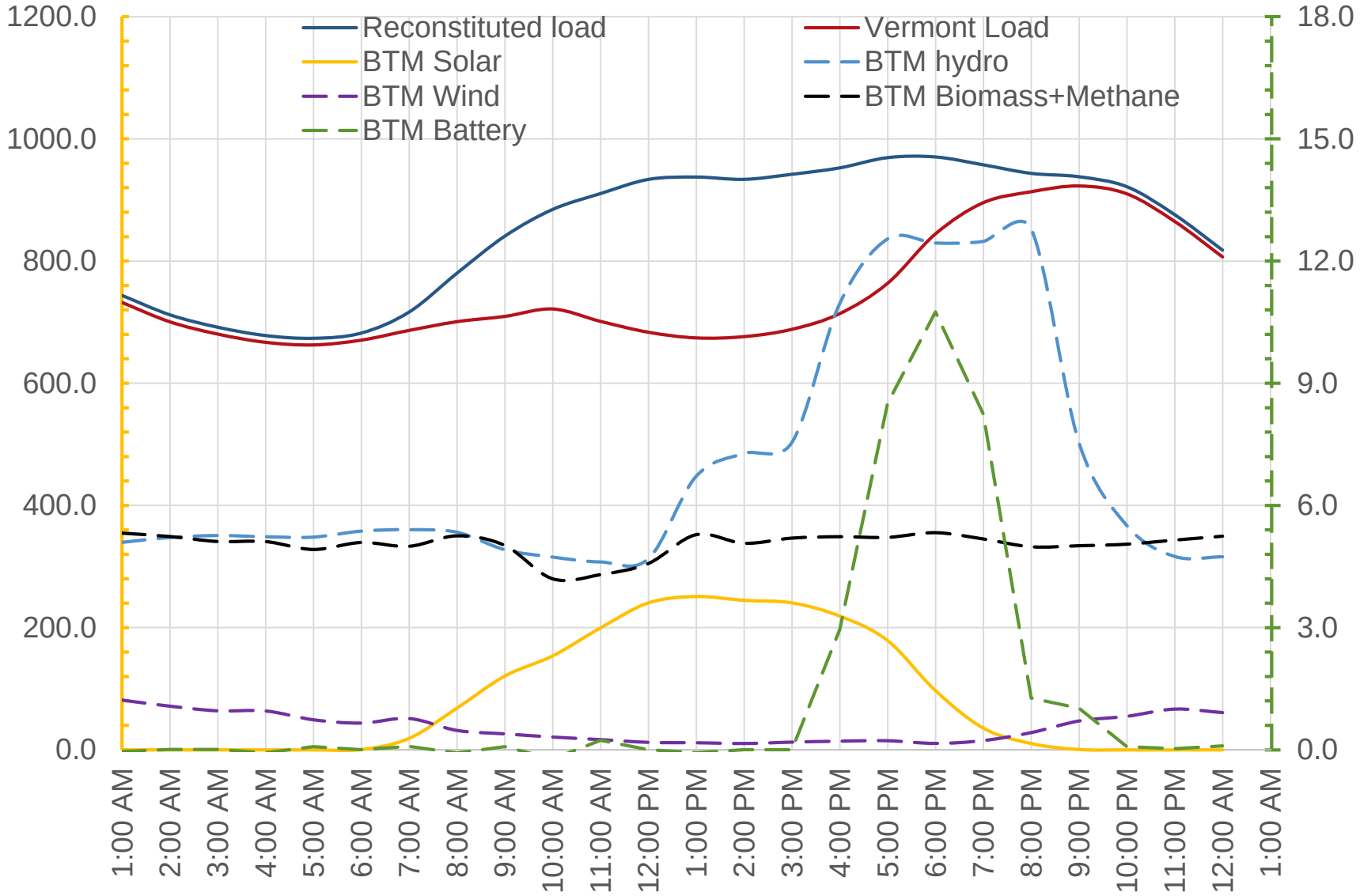
Vermont's resources

	Summer capacity	Renewable	Weather dependent	Inverter interfaced
Biomass (wood)	75	Yes		
Hydro	129	Yes	Yes	
Diesels and GTs	157			
Methane (landfill)	13	Yes		
Wind	150	Yes	Yes	Yes
Solar	20	Yes	Yes	Yes
Behind-the-meter				
Biomass	8.23	Yes		
Hydro	27.7	Yes	Yes	
Methane (farm)	7.02	Yes		
Wind	1.57	Yes	Yes	Yes
Solar	327.18	Yes	Yes	Yes
Battery	17.20			Yes
Total	**940**	**765**	**662**	**516**
Highgate HVDC	222	Maybe		Yes

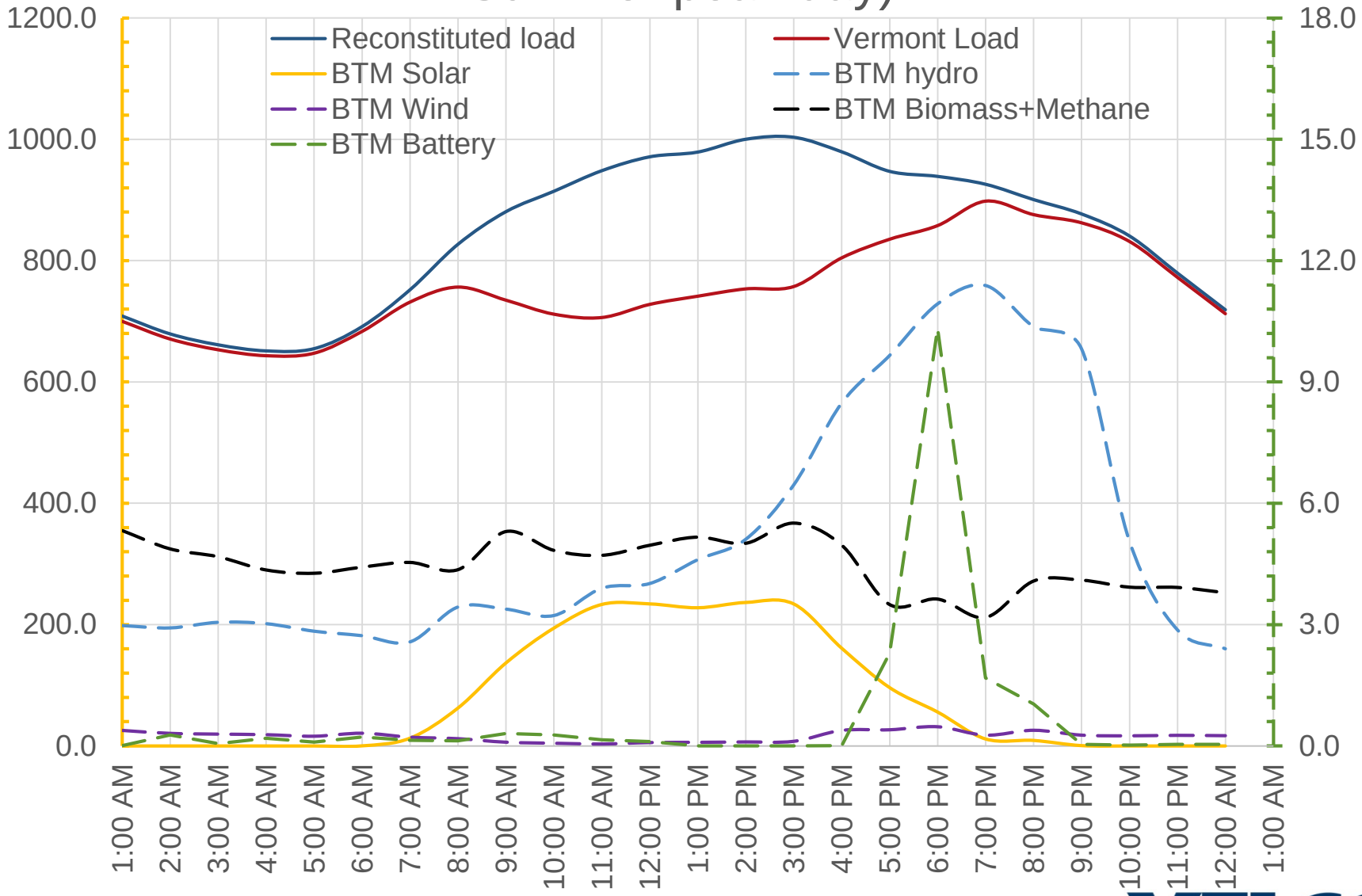
July 20, 2019 (Vermont Summer peak day)



July 20, 2019 (Vermont Summer peak day)



July 30, 2019 (VT load on the New England Summer peak day)



LOAD FORECAST

Load forecast work plan

- **November 2019**: Key inputs into the forecast, identify data sources
- **January 2020**: Review methodology to reflect the effects of future committed energy efficiency, net metering, distributed generation, and other committed small scale resources
- **February 2020**: State economic outlook and results of the most recent saturation survey
- **May 2020**: Review draft load forecast
- **June 2020**: Review final load forecast

Summary of November kickoff meeting

- Initial observations
  - Demand and energy declining while the economy is growing
  - Actual energy consumption lower than previous forecast
  - Vermont has the highest number of EV charging stations per capita in New England
- Forecast load at the zonal level and state level
  - Prior forecasts were at the state level, then allocated to zones
- Improve model of long term climate impact
- Consider storage growth and load flexibility
- Model several scenarios affecting load and generation
- VELCO forecast will likely be used by others

See presentation at
https://www.vermontspc.com/library/document/download/6777/IRPFcst20_KickOff_Nov7v2%20%281%29.pdf