

ISO-NE Distributed Generation Working Group

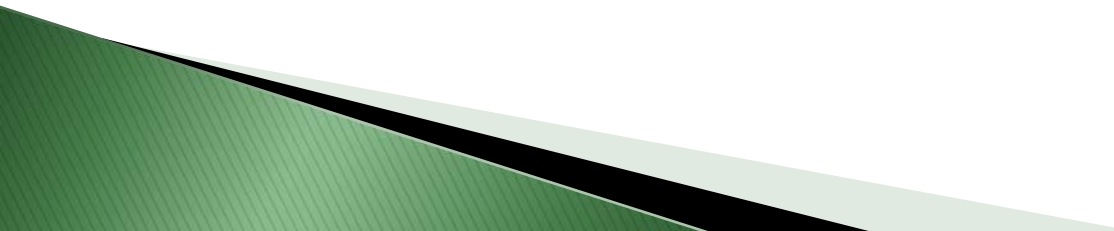
TJ Poor VT PSD

Update to VSPC Forecasting Committee 1/30/14

ISO webpage:

http://www.iso-ne.com/committees/comm_wkgrps/other/distributed_generation_frcst/2014mtrls/jan272014/index.html

Background Reminder

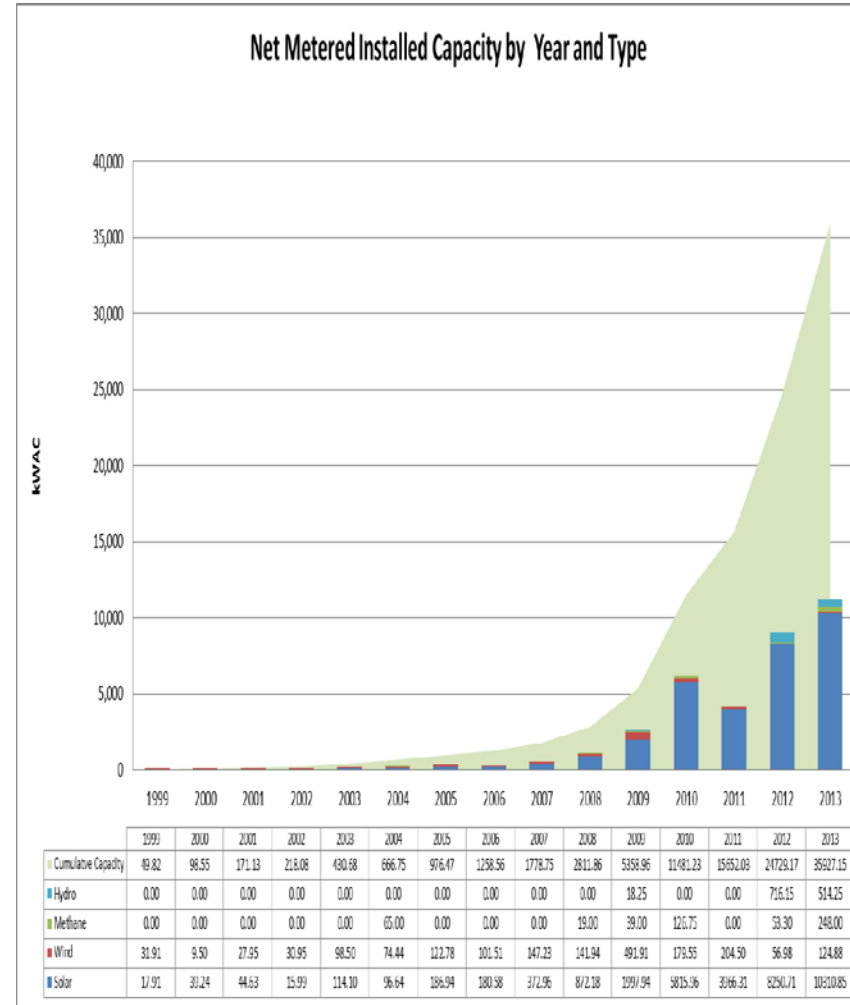
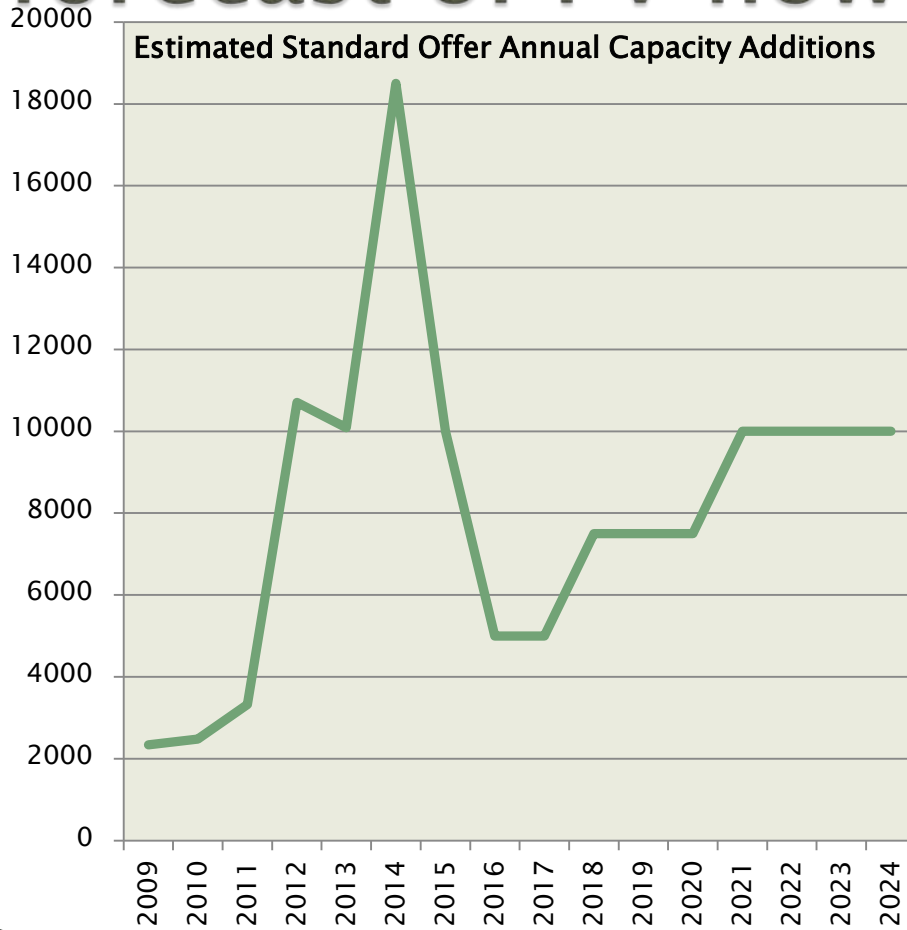
- ▶ Stakeholders encouraged ISO to include impacts of DG in CELT and RSP
 - ▶ General Agreement to begin with Solar PV
 - Significant public policy push
 - Improving Economics
 - Potential for reliability impacts of high penetrations
 - ▶ Kicked off Sept
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ISO – Current DG Forecast Practice

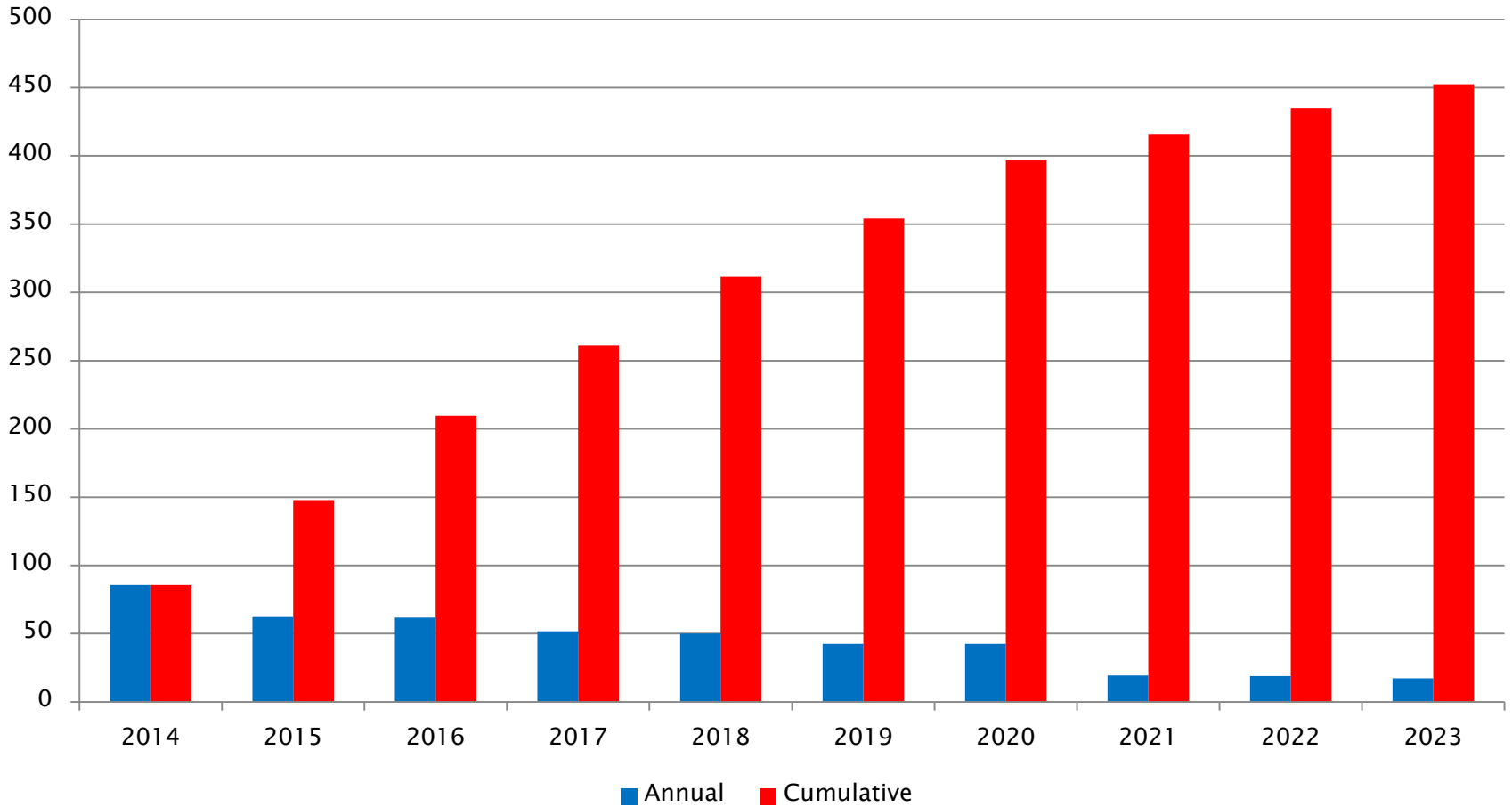
- ▶ DG with obligations in FCM included in load and forecast
- ▶ Existing non-FCM DG registered in Wholesale Energy Markets are counted
- ▶ Load reductions from remainder of existing DG are **embedded in historic loads** used to develop ISO's 10 year load forecast used in ICR calculation
 - Existing DG that ISO doesn't know about

VT Presentation at DGFVG

Illustrates importance of including forecast of PV now



ISO Revised Interim Forecast



States	Annual Total MW (MW, AC nameplate rating)											Totals
	Thru 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
CT	77.1	50.6	45.6	65.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	557.9
MA	352.7	188.6	139.4	139.4	139.4	132.8	132.8	132.8	132.8	132.8	132.8	1,756.4
ME	5.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	20.0
NH	9.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	35.1
RI	10.1	8.4	6.6	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	64.7
VT	54.0	20.3	13.5	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	141.8
Annual Policy-Based MWs	508.7	271.8	209.1	220.7	195.8	189.2	146.6	146.6	13.8	11.3	1.5	1,915.1
Annual Post-Policy MWs	0.0	0.0	0.0	0.0	5.0	5.0	47.5	47.5	180.3	182.9	192.7	660.8
Annual Nondiscounted Total (MW)	508.7	271.8	209.1	220.7	200.7	194.1	194.1	194.1	194.1	194.1	194.2	2,575.9
Cumulative Nondiscounted Total (MW)	508.7	780.5	989.7	1,210.4	1,411.2	1,605.3	1,799.4	1,993.5	2,187.6	2,381.7	2,575.9	2,575.9
Discounted MWs												
Total Discounted Annual	508.7	244.7	177.8	176.6	148.1	143.1	121.8	121.8	55.4	54.2	49.3	1,801.4
Total Discounted Cumulative	508.7	753.4	931.1	1,107.7	1,255.8	1,398.9	1,520.7	1,642.6	1,698.0	1,752.1	1,801.4	1,801.4
Final Summer SCC (MW) Based on 35% [Assume Winter SCC equal to zero]												
Annual: Total Discounted SSCC (MW)	178.0	85.6	62.2	61.8	51.8	50.1	42.6	42.6	19.4	19.0	17.3	630.5
Cumulative: Total Discounted SSCC (MW)	178.0	263.7	325.9	387.7	439.5	489.6	532.3	574.9	594.3	613.2	630.5	630.5

Notes:

(1) Yellow highlighted cells indicate that values contain post-policy MWs

(2) "Thru 2013" values must be reconciled with distribution queue data

PV MW forecast Highlights

- ▶ Known and Policy Driven projects only
- ▶ After known policy ends – higher discounting (75%)
- ▶ 35% Summer Seasonal Claimed Capability (based on ISO tariff)
- ▶ Gradual Discount of Policy Driven MW 10% in 2014 to 25%
- ▶ Some additional data will be gathered however big changes not expected**
 - Depending on timing of NM legislation may be able to incorporate changes in VT
- ▶ Expected to be used to inform CELT
- ▶ Will not reconstitute load to account for historic MW
 - Instead will look at results and make adjustments as necessary.

VT details

- ▶ Includes expected standard offer
- ▶ Includes specific known projects
 - VEC 5 MW
 - BED RFP results
 - Solar Capital
- ▶ Net Metering – 4% of cap

Interconnection Issues

- ▶ State jurisdictional interconnection standards for DG consistent with IEEE Standard 1547
 - Has a “don’t ride through” requirement for voltage and frequency deviations – problematic for ISO
- ▶ IEEE 1547a Working Group approved amendment to 1547 which would allow additional flexibility for voltage and frequency trip point settings
 - Amendment expected to receive approval in March, then published within 6 mo.
- ▶ States will then have to revise interconnection rules accordingly
- ▶ Right now, penetration does not seem high enough to be a great concern, but we are getting there, so changes will need to be made

Forecast Use

- ▶ Expected to be used in CELT
- ▶ Tariffs, market rules, planning guidelines etc. will need to be updated (following appropriate processes)
 - Uses of DG Forecast will be vetted through PAC
 - Changes to Market rules, planning procedures reviewed with NEPOOL Committees
 - Tariff changes through normal process

Forecast Use (cont.)

- ▶ “ISO will integrate into each study in a manner that is consistent with the purpose of the study and the nature and performance of the type of DG resource”
 - E.g. hourly data for resource adequacy studies
 - Location and type for transmission planning studies
- ▶ Many issues identified with use of forecast in a particular study, e.g.
 - No capacity obligation through FCM
 - Amount of PV that should be counted on for reliability at peak

Further, Future Considerations

- ▶ Continue to update and refine the DG forecast
 - Include other expected sources of DG – CHP, biomass, etc.
 - Economic drivers instead/along with policy drivers
- ▶ ISO continuing to review data sources
 - NEPOOL GIS
 - Wholesale Energy Market
 - EIA Form 861
- ▶ PV Panel Degradation Rates

Next Steps

- ▶ Opportunity for comment on the values of the forecast
- ▶ DG forecast will work its way through various committees at ISO –
 - NEED UTILITY PARTICIPATION

Appendix – presentation from 12/11

<http://www.vermontspc.com/VSPC%20Meetings/20131211%20DGFWG%20update%20slides%20for%20VSPC.pdf>

Implications of a Long-Term DG Forecast

- ▶ May affect system studies of resource adequacy, transmission planning, and economic studies
- ▶ Work with DG Forecast Working Group will enable stakeholders to share information
 - Better understanding of DG Impacts on peak
 - Address DG integration challenges

Challenges to Forecast DG

- ▶ Long-term funding for some state DG programs unclear; unlike EE rely more on mix of public/private investment
 - ▶ Market and technology uncertainties affect potential and realizable amounts of DG development
 - ▶ Avoiding double counting of DG resources
 - ▶ Timing of development
 - ▶ Location
 - ▶ Potential reliability impacts – voltage issues and reverse power flows
 - ▶ Development of Resource Capacity Credit
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