



Vermont System Planning Committee

Ensuring full, fair and timely consideration of non-transmission alternatives to address Vermont electric system reliability challenges.



**QUARTERLY MEETING
SEPTEMBER 11, 2013
9:30 A.M. – 4:00 P.M.
HOLIDAY INN
RUTLAND, VT**

Agenda & Proposed Order of Business

Morning

- Welcome & introductions
- Approval of June minutes
- Subcommittee reports
 - Geotargeting
 - ✦ GT recommendations to PSB
 - ✦ GT calendar/next steps
 - ✦ Screening framework revisions
 - Forecasting
 - ✦ Summer peak analysis

Afternoon

- Subcommittee reports cont'd
 - Coordinating
 - ✦ Oct 11 NTA workshop
 - Public Participation
- Old business
 - Standard offer update
 - Net metering update

Regional update

- VT/NH needs assessment
- DG working group
- Regional System Plan meeting
- FERC Order 1000 update
- FCM zone changes

Project updates

- Screened in
 - ✦ Rutland
 - ✦ St. Albans/East Fairfax
 - ✦ Central VT
- Screened out
 - ✦ SE VT, CT River, Colchester, Hartford/Ascutney, Northern Area, IBM, Vernon Road, PV-20

Geotargeting Subcommittee



GT PROCESS IMPROVEMENT EFFORT

GT CALENDAR/NEXT STEPS FOR VSPC

**SCREENING FRAMEWORK & GUIDELINES
REVISION TO INCORPORATE DISTRIBUTION**

GT process improvement: Three related requirements/processes



- **Docket 7081 MOU / Docket 6290**
 - Transmission and distribution system reliability planning
- **Energy efficiency geotargeting**
 - Evolving process where VSPC makes recommendations to PSB w/r/t targeted areas
- **Docket 7873 standard offer**
 - VSPC designated entity to recommend areas where generation projects could provide “sufficient benefit”

Geotargeting Subcommittee goals



- Improve infrastructure reliability planning process w/r/t analysis and implementation of cost-effective alternatives
 - Harmonize processes
 - Eliminate duplication of effort
 - Understand and clearly articulate process

Goals for today



- **Share results**
 - Geotargeting process map
 - VELCO Long-Range Plan process map
 - Process coordination graphic
 - GT process memo
- **Approval to send process reform suggestions from VSPC to PSB**
 - No required modifications to the Docket 7081 MOU
 - EE “Process and Administration” documents have already been recommended by DPS to be modified consistent with prior PSB Orders

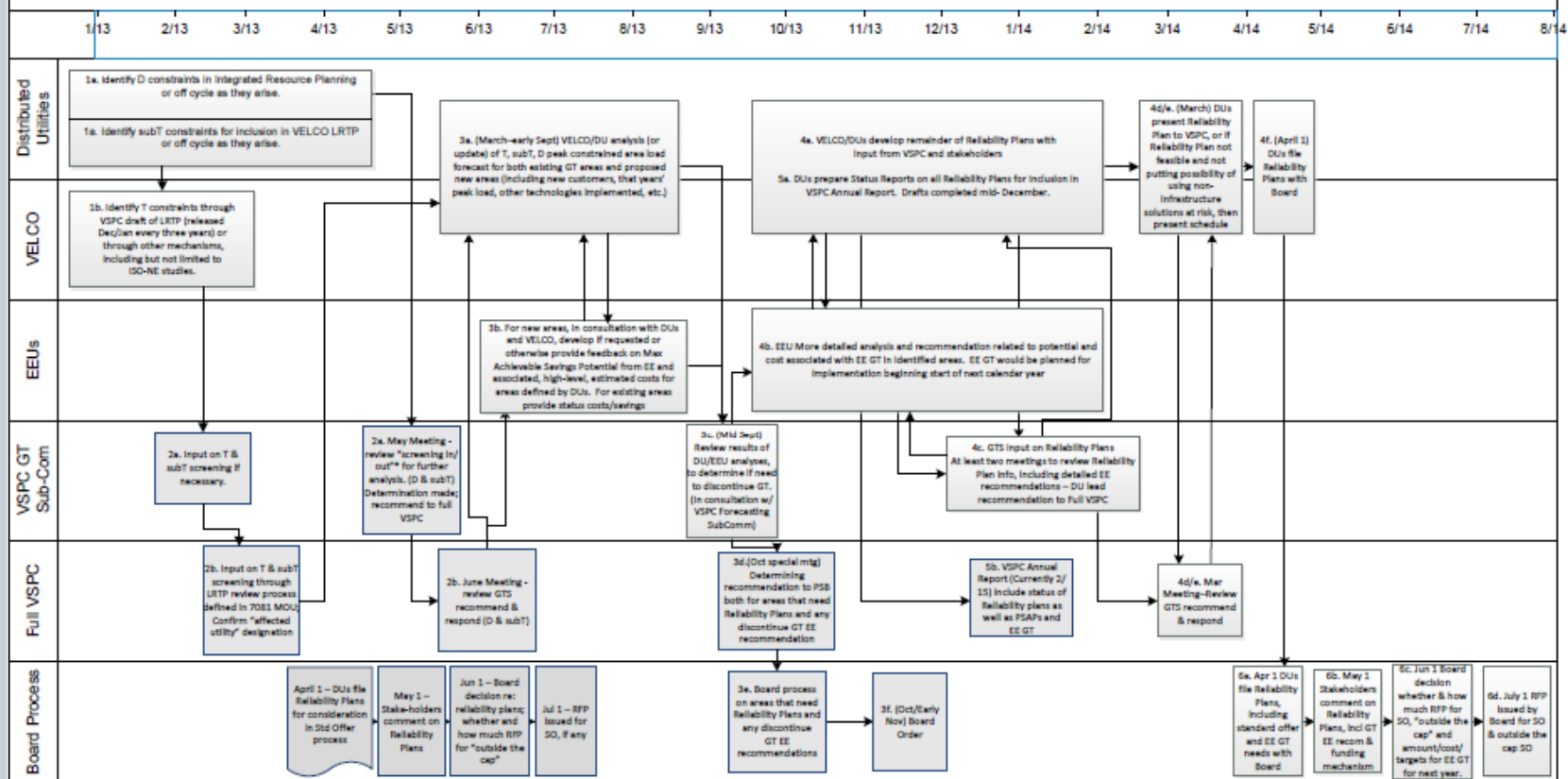
Scope



- **Reliability planning only**
 - Does not consider economic/market driven projects
- **Projects that have “screened in” under 7081 or 6290 tools**
- **Implementing current policies**
 - Does not focus on whether changes in policies would lead to better outcomes
- **Process is the default**

Walkthrough of process improvement Maps

Geotargeting Process Map – Draft 8.15.13



*"Screening" refers to the use of the Docket 7081 screening tool for bulk and predominantly bulk transmission and the Docket 6390 screening tool for subtransmission and distribution issues to determine their potential to be resolved through energy efficiency and/or alternatives such as generation or demand response (or a hybrid of transmission with efficiency and/or generation). An issue is "screened in" if it has potential for a non-wires solution and therefore requires a Reliability Plan, and "screened out" if no potential is found and, therefore, no Reliability Plan is required.

Key to abbreviations

- LRTP VELCO Long-Range Transmission Plan
- DU distribution utility
- GTS VSPC Geotargeting Subcommittee
- EE energy efficiency
- GT geographic targeting
- D distribution
- T transmission (bulk/predominantly bulk)
- subT subtransmission (subsystem)

GT Process Summary



- Effort to coordinate timing/responsibilities of overlapping requirements, avoiding duplication while clarifying process
- Looking for feedback, approval to move forward with this process (as may be modified by VSPC)
- Seeking approval for GTS to write cover letter and provide documents to the Board for informational purposes

GT Subcommittee calendar/next steps



- **St. Albans reliability plan – Oct 1 target**
 - Conference call to go over the EE portion of Reliability Plan
- **Oct 1 meeting**
 - St. Albans Targeted Area
 - Susie Wilson Targeted Area
 - Other areas?
- **Special meeting October**
 - Any “stop GT” recommendation
 - Recommendation if any new area needs reliability plan

Screening Framework & Guidelines for Implementation of 30 V.S.A. § 8005a(d)(2)

Proposed revisions to incorporate
distribution-level reliability plans for
consideration of standard offer
outside the annual cap

8/8/13 PSB requested input on D 7873/7874 open issues



- Value-based, formula approach to sufficient benefits test—comments by 9/27/13
- **Proposed revision to the Screening Framework to screen distribution-level constraints**
 - **Proposal by VSPC or one of its members by 9/27/13**
 - **Workshop 10/8/13, 9:30 a.m.**
- Technology allocation in light of 2013 RFP experience—comments by 9/4/13 (past)
- Provider block—comments on next steps to determine avoided cost by 9/27/13



Seeking VSPC review & approval to file w/ PSB

What is the screening framework?



- Proposed by stakeholders and approved by PSB in standard offer docket (7873/7874) for determining whether to solicit standard offer outside the annual cap
 - Would standard offer provide “sufficient benefit” to the operation & maintenance of the grid?
- Required analysis for all transmission and subtransmission reliability deficiencies that “screen in”
 - PSB left open how to screen distribution
- PSB deferred inclusion of distribution in Year 1, but required further consideration for Year 2
 - Subcommittee proposes to address distribution through revision of existing screening framework under consideration today

Draft revision of screening framework proposed by GT Subcommittee



- Uses existing framework to address all system levels: transmission, subtransmission, distribution
- Employs DUP/Docket 6290 screening tool for distribution constraints
- Utilities have choice of D.6290 or D.7081 screening tool for subtransmission; must explain choice
- Corrects a grammatical error and references to SPEED standard offer

Requested action: approval to submit to PSB on behalf of VSPC

Forecasting Subcommittee



2013 SUMMER PEAK ANALYSIS

SEE SEPARATE PRESENTATION

Forecasting Subcommittee Update

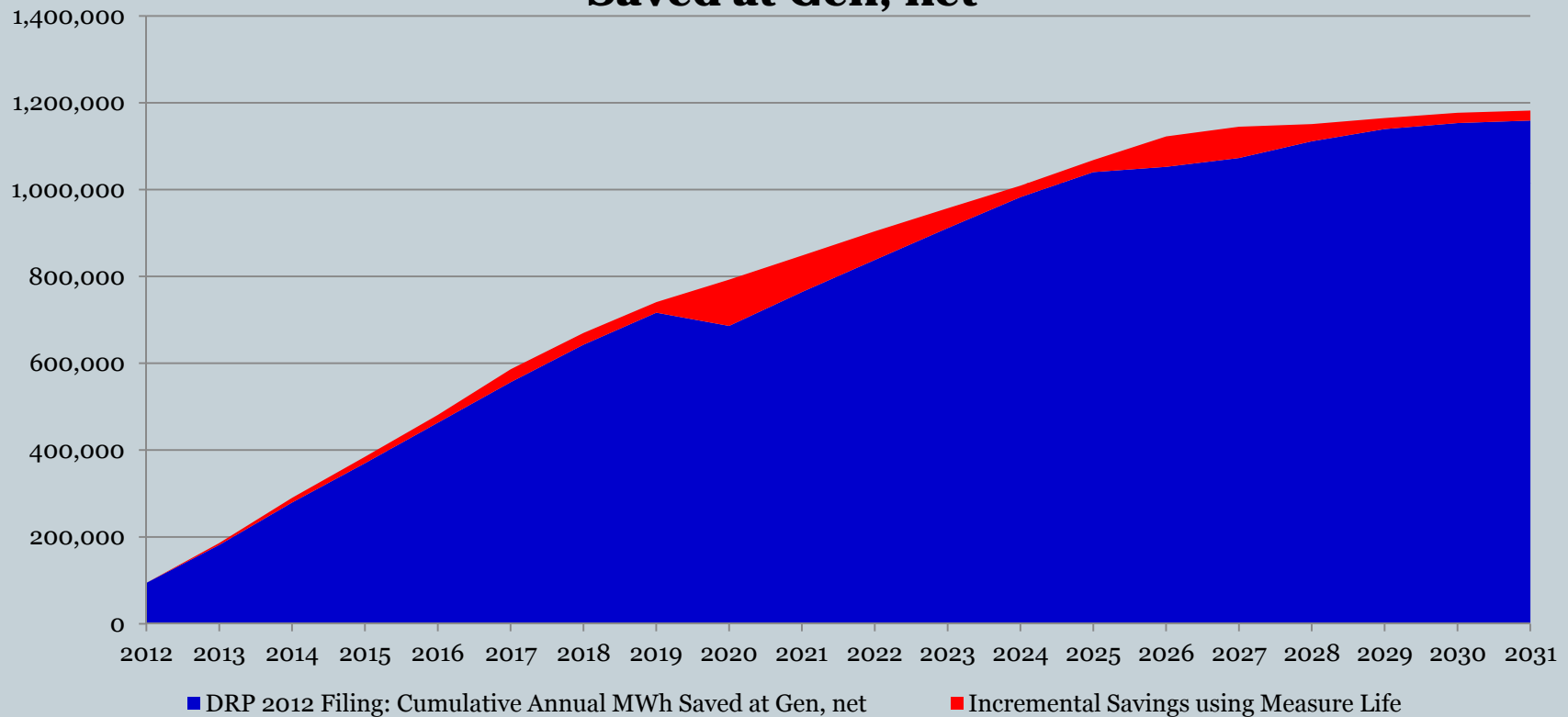


- **Reviewed ISO-NE CELT Forecast focusing on VT**
 - Planning to change subcommittee's timing to foster input into CELT forecast process
 - Communicate with ISO-NE starting in Oct/Nov timeframe instead of after the process is completed in April
- **Utilities need to determine appropriate definition of Efficiency Decay for load forecasting**
 - Historical EEU view has been program life versus engineering life
 - This tends to understate the benefits of efficiency
 - Any change needs to be implemented statewide

Efficiency Decay



Efficiency Measure Life : Cumulative Annual MWh Saved at Gen, net



- Red indicates the “incremental” savings achieved by using the engineering life versus program life

Coordinating Subcommittee



October 11, 2013—9am-noon

Capital Plaza Hotel, Montpelier

Maine & Regional NTA Workshop

Panelists:

- Dave Conroy, Central Maine Power
- Jason Rausch, Maine Public Utilities Commission
- Heather Hunt, New England State Committee on Electricity
- ISO-New England representative TBA

Standard Offer Program Update



RFP & responses



- Board Issued RFP April 1
- Respondents all solar
- Award projects
 - Bennington 2MW - \$0.134
 - Sudbury 2MW - \$0.144
 - Middlebury 2MW - \$0.1441
- Reserve (all 2.2MW)
 - Pittsford \$0.1491
 - Whiting \$0.1609
 - Williston \$0.1639

Standard offer Board orders & memos



- **Procedures for filling unused program capacity**
 - Original 50MW that may become available to be filled by Reserve (or added to next solicitation if Reserve insufficient)
- **Follow-up proceedings**
 - Technology allocation (comments 9/4)
 - Value-based mechanism and sufficient benefits test (comments 9/27)
 - Distribution Screening Framework and Guidelines (comments 9/27; workshop 10/8 9:30am)
 - Provider block – determine avoided cost figures (procedural & substantive comments 9/27)

Standard offer program challenges



- PSB denied lowest bid project as inconsistent with statutory and program criteria
 - Developer appealed to Supreme Court (pending)
- Developer challenged standard offer program as violating PURPA
 - FERC responded that standard offer is an optional program, available to certain small QFs, that does not preclude participation in PSB Rule 4.100
 - Requested rehearing of FERC decision (pending)

Net Metering Update

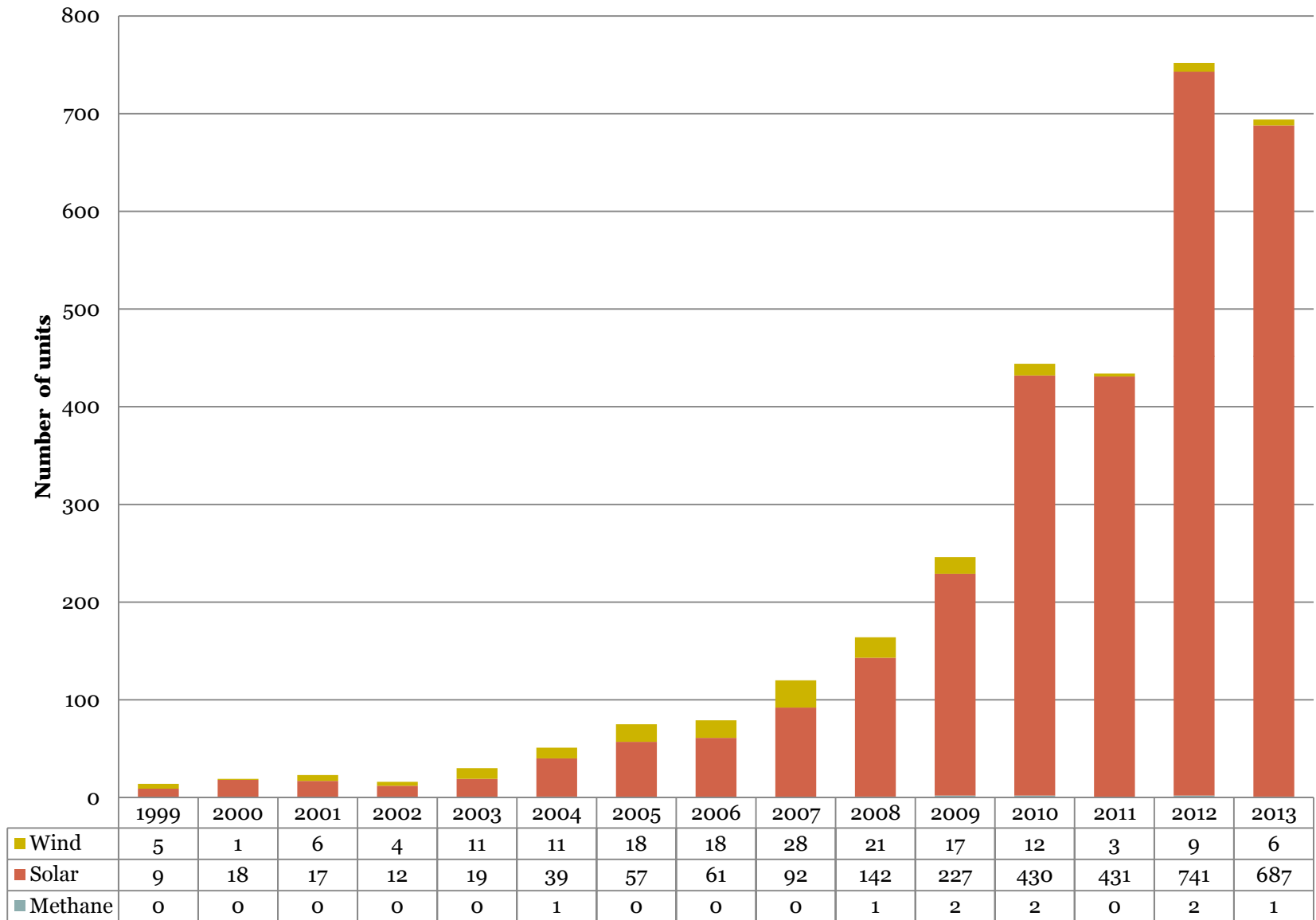


Vermont net metering—Reminder

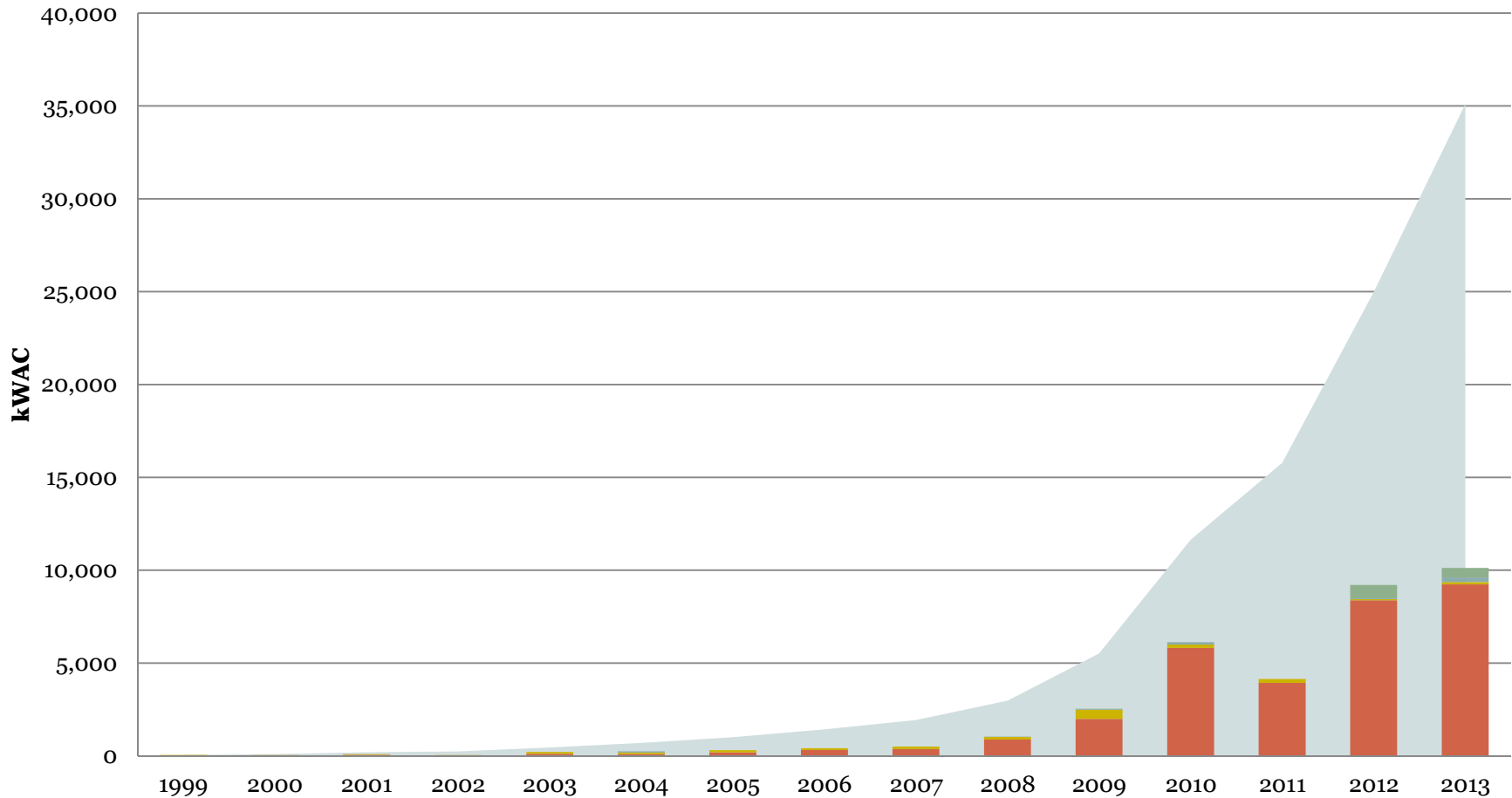


- NM enabled 1997—altered 8 times
- Size limit $\leq 500\text{kW}$
- Average installed PV system sizes 2004=1.9kW;
2011 6.1kW
- **Requirement limited to 4% of utility peak load**
- Solar adder for PV—results in \$0.20/kWh credit,
escalating
 - Plus state rebate ~5% cost
 - Tax credits ~30-40% cost
- Credits to entire bill, not just kWh charge
- PSD statewide impact study released Jan 2013
http://publicservice.vermont.gov/topics/renewable_energy/net_metering

Number of net-metered installations per year

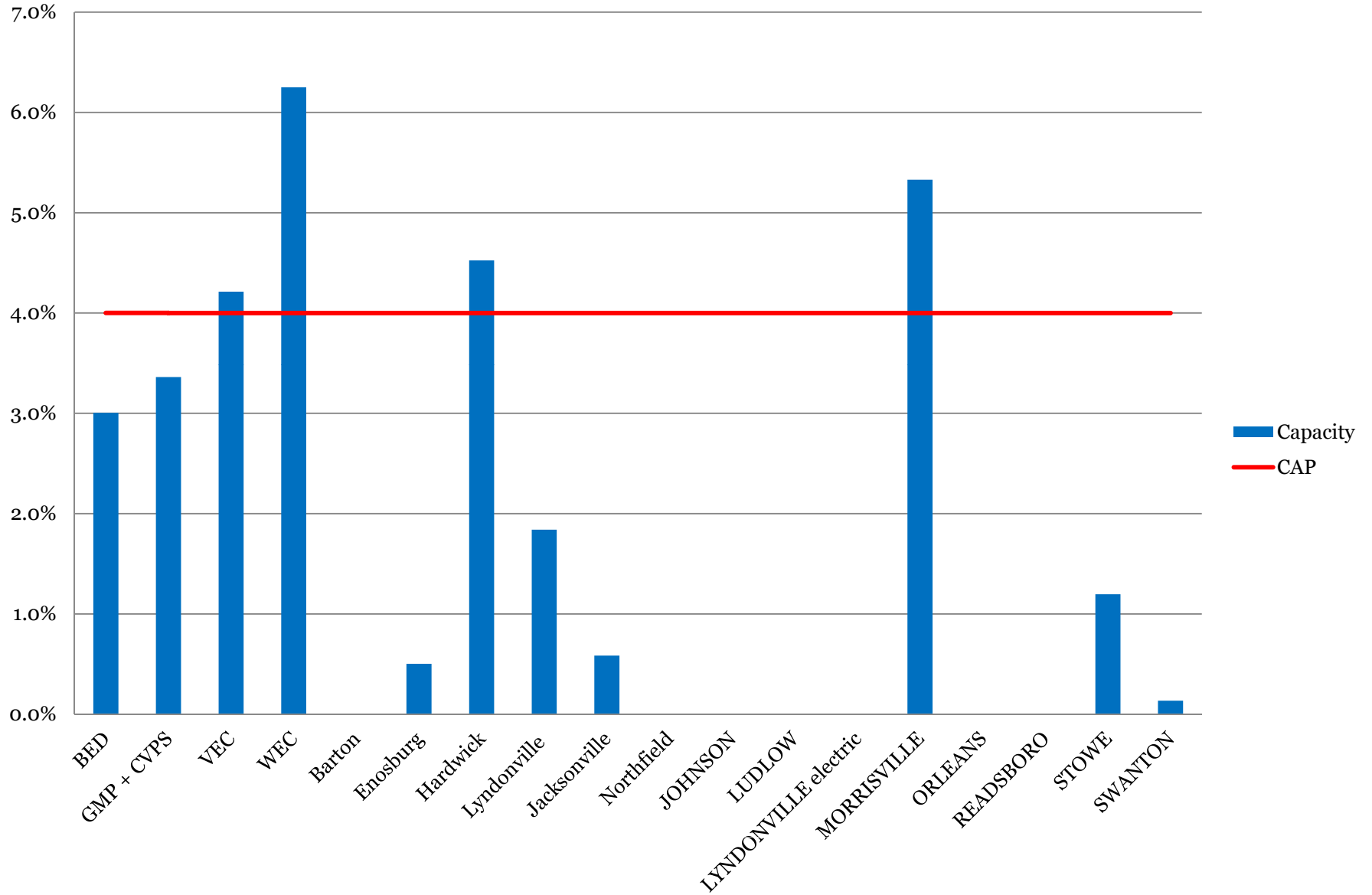


Net-metered installed capacity by year and type



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cumulative Capacity	54.85	103.59	196.35	244.56	457.49	703.07	1014.19	1431.79	1938.72	2979.43	5521.68	11644.53	15783.03	24990.86	35114.37
Hydro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.25	0.00	0.00	716.15	514.25
Methane	0.00	0.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00	19.00	39.00	126.75	0.00	53.30	248.00
Wind	31.91	9.50	27.95	30.00	98.50	83.94	122.78	101.51	140.79	144.44	491.91	179.55	204.50	56.98	124.88
Solar	22.95	39.24	64.81	18.22	114.43	96.64	188.34	316.09	366.14	877.28	1993.09	5816.55	3934.00	8381.40	9236.38

% net-metered capacity by utility



Department of Public Service efforts



- Department's goals are to continue to support net metering availability while ensuring equity
- Department engaged stakeholders in two meetings
 - VEC and GMP presented their perspectives on the costs/benefits of net metering on their systems
 - Developers presented their perspectives on the developers' costs and customer needs
- We will seek to have a proposal for stakeholders in advance of the Legislative session
 - *Data on previous slides as of 8/30 CPGs approved

Future meeting dates



December 11, 2013 – Burlington

March 12, 2014 – *Randolph*

June 11, 2014 – *Montpelier*

September 10, 2014 – *Rutland*

December 10, 2014 - *Burlington*

Project Updates



PROJECT-SPECIFIC ACTION PLAN STATUS REPORTS

CURRENT PLANS IN VSPC ANNUAL REPORT
[HTTP://GOO.GL/2VFH0](http://goo.gl/2VFH0)

RUTLAND

CENTRAL VERMONT

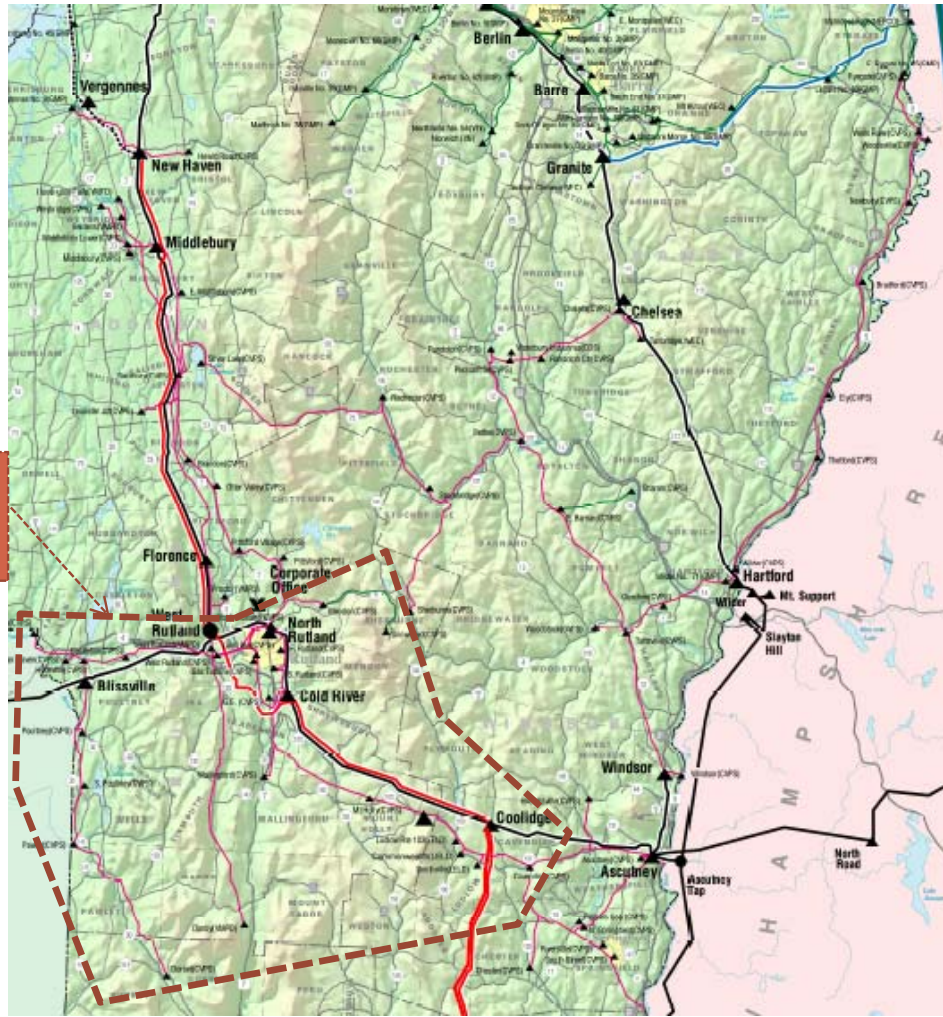
Rutland Area study: Status report to VSPC

September 2013

Orientation

The area of concern includes the Blissville, Rutland, and Cold River areas as well as the subtransmission corridor that extends out to Cavendish.

Area of concern



Problems



- The area's problems are complex, multi-dimensional, and interdependent. They include:
 - A deficiency in the number and total thermal capability of area 115/46 kV transformer interconnections.
 - The anticipated integration of the recently acquired, relatively weak, and radially-fed Vermont Marble Power Division system.
 - An aged combustion turbine (approximately 10 Mw) intended for peak load support that is no longer reliable.
 - A rather large matrix of area subtransmission lines, many of which are thermally inadequate.

Solution alternatives noted in GMP's previous analysis



- New 115/46 kV West Rutland interconnection utilizing existing open 115 kV bay at VELCO's West Rutland substation.
- NTA/TA hybrid that includes 30 MW of new combustion turbines at Lalor Avenue in Rutland and significant area re-conductoring. (Excludes generation redundancy requirements, and also excludes estimated in present value for FCM revenue benefit.)
- New 115/46 kV West Rutland interconnection requiring a new 115 kV bay at VELCO's West Rutland substation.
- New 115/46 kV South Rutland interconnection substation.
- Second North Rutland autotransformer with substation expansion.

Next steps, as noted in our last report to the VSPC



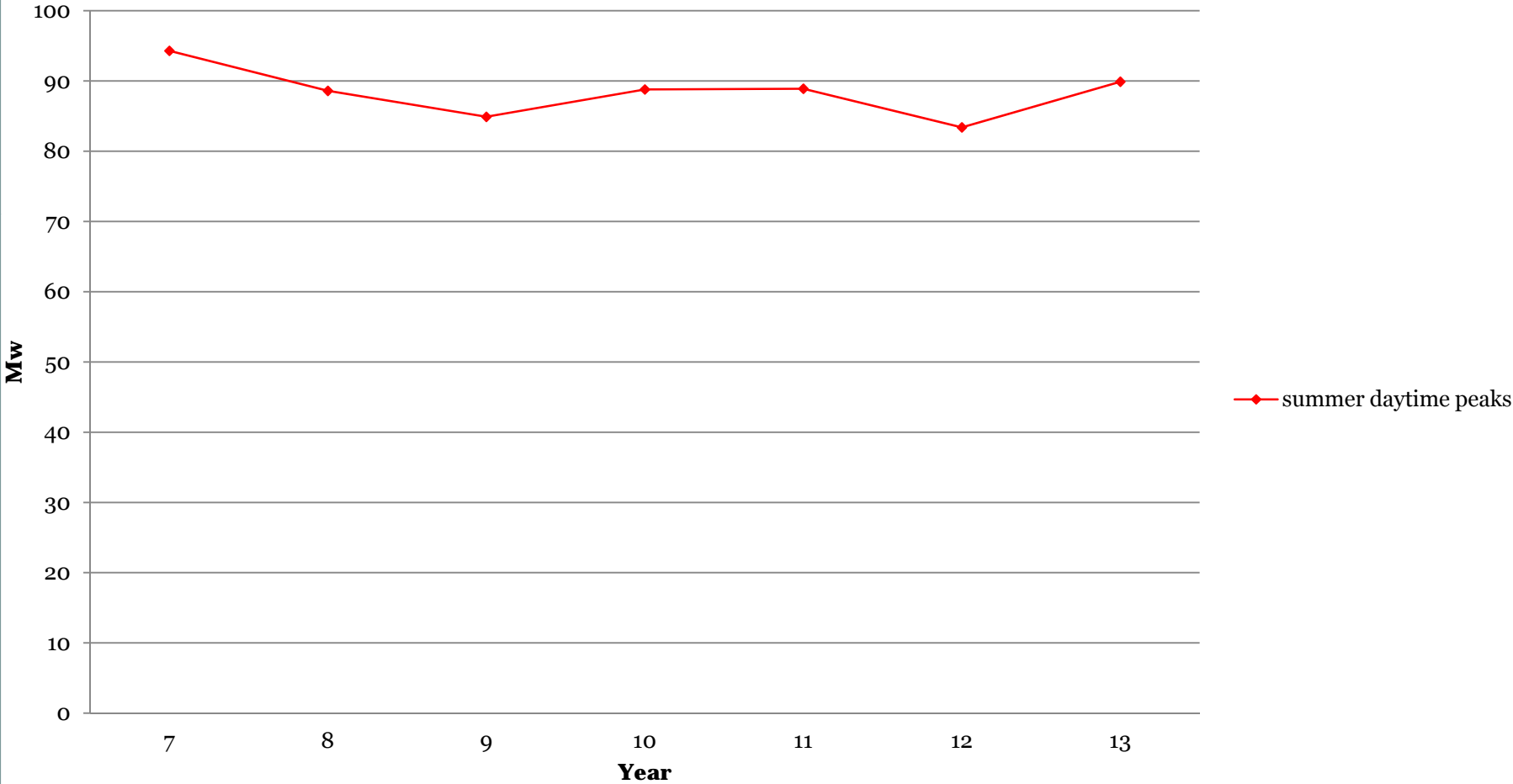
1. Determine availability of open 115 kV bay at West Rutland substation.
2. Reevaluate need based on most recent load forecast.
3. Update analysis to reflect “Solar Capital” resources, Standard Offer program resources, other policy initiatives, and potential market-based revenue from new generation.
4. Finalize cost analysis of all possible solution alternatives.
5. Choose and implement solution alternative (248 application filing in 2015 per VSPC Action Plan).

Assumptions going forward



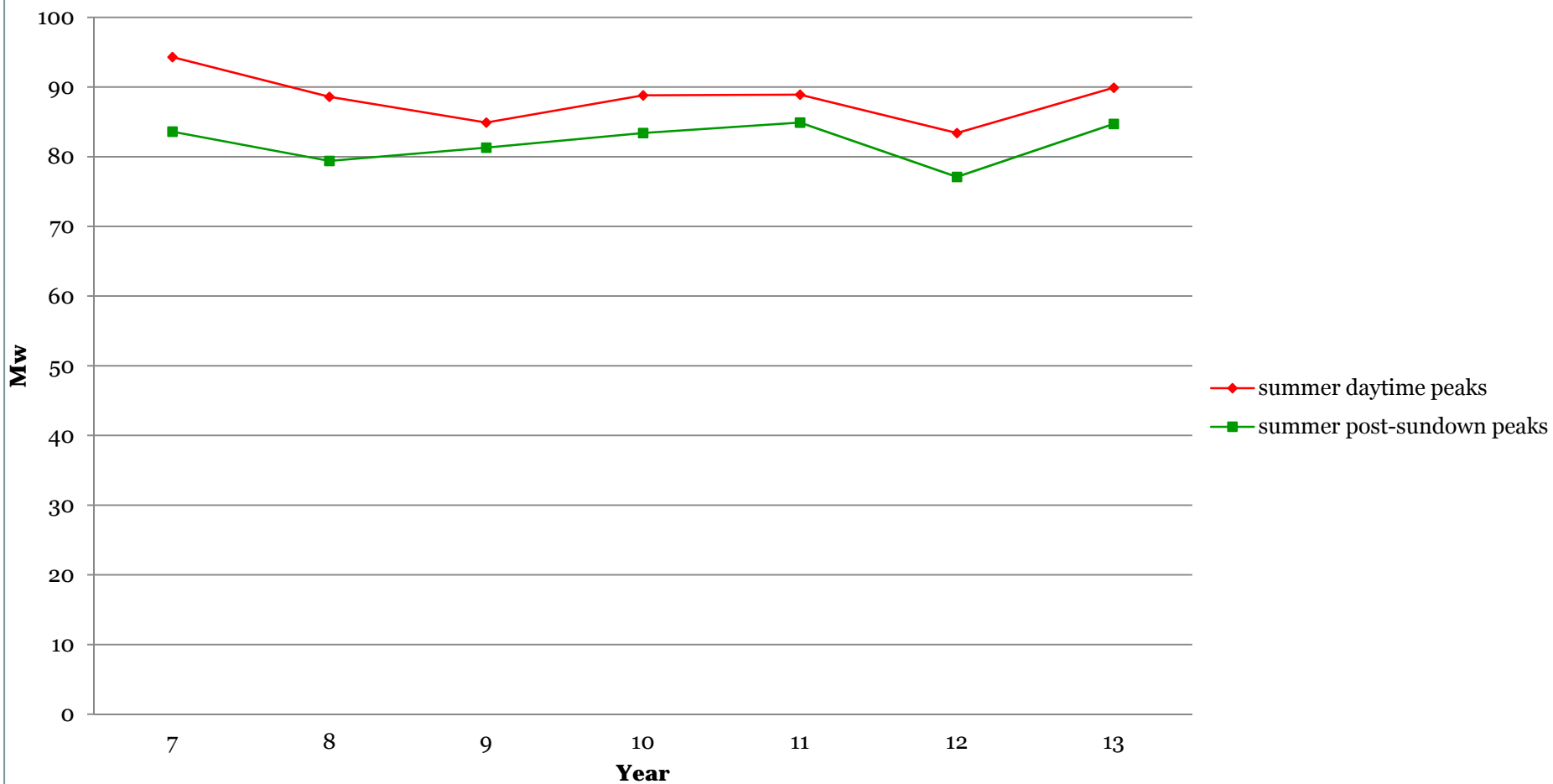
- Area load trends appear to be static (neither growing nor declining significantly).
- Solar will be evenly dispersed in relatively small installations (therefore it will behave much like a uniform load reduction).
- No significant energy storage capability is anticipated.
- Little wind power, which typically has a very low capacity factor anyway, is expected to come to this area in the next few years.

2007-2013
Rutland-area peak demand
(No significant load growth or decline)



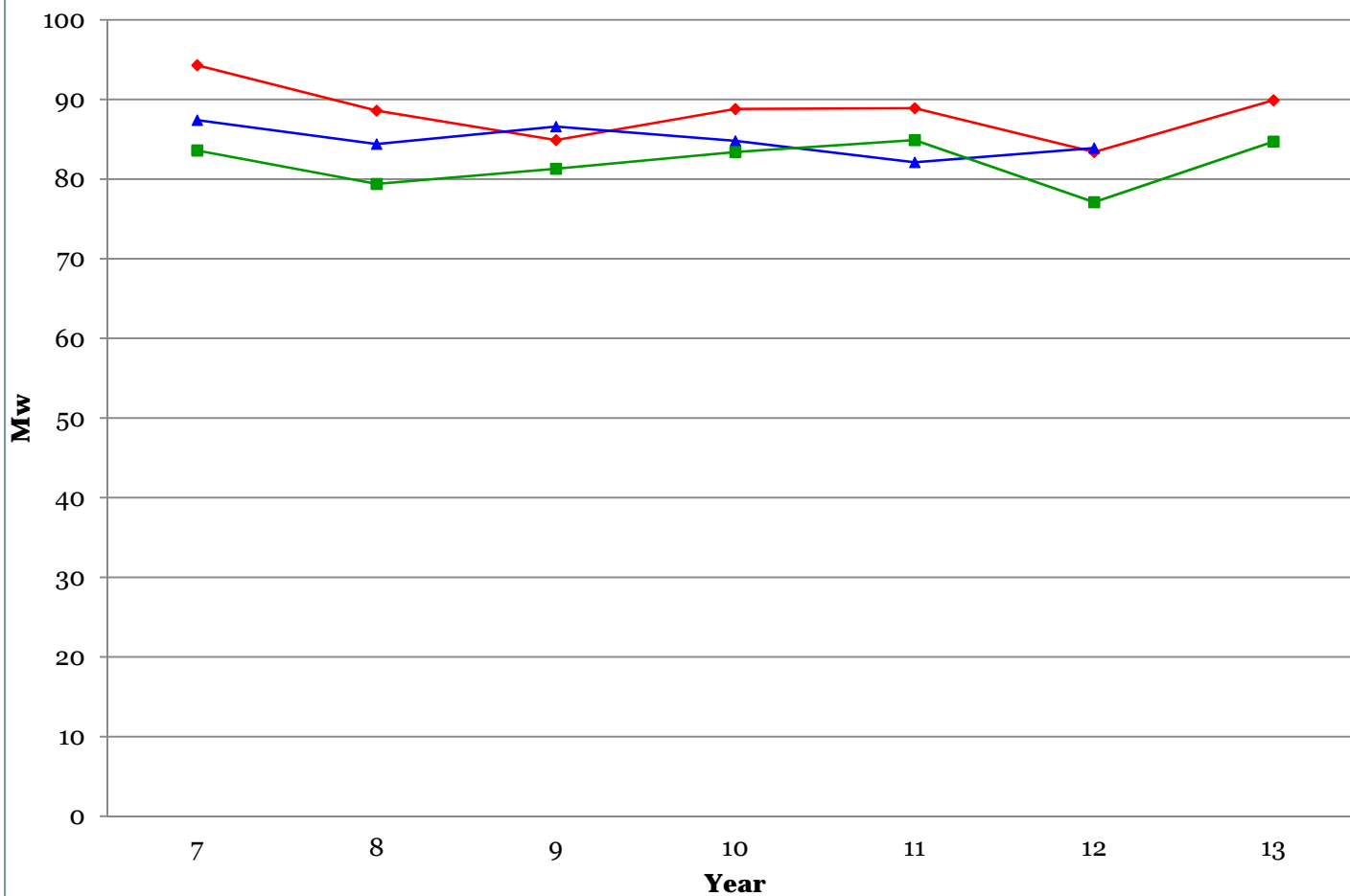
2007-2013 Rutland-area peak demand

On average, **summer post-sundown peaks** are 93% as high as **summer daytime peaks**.



2007-2013 Rutland-area peak demand

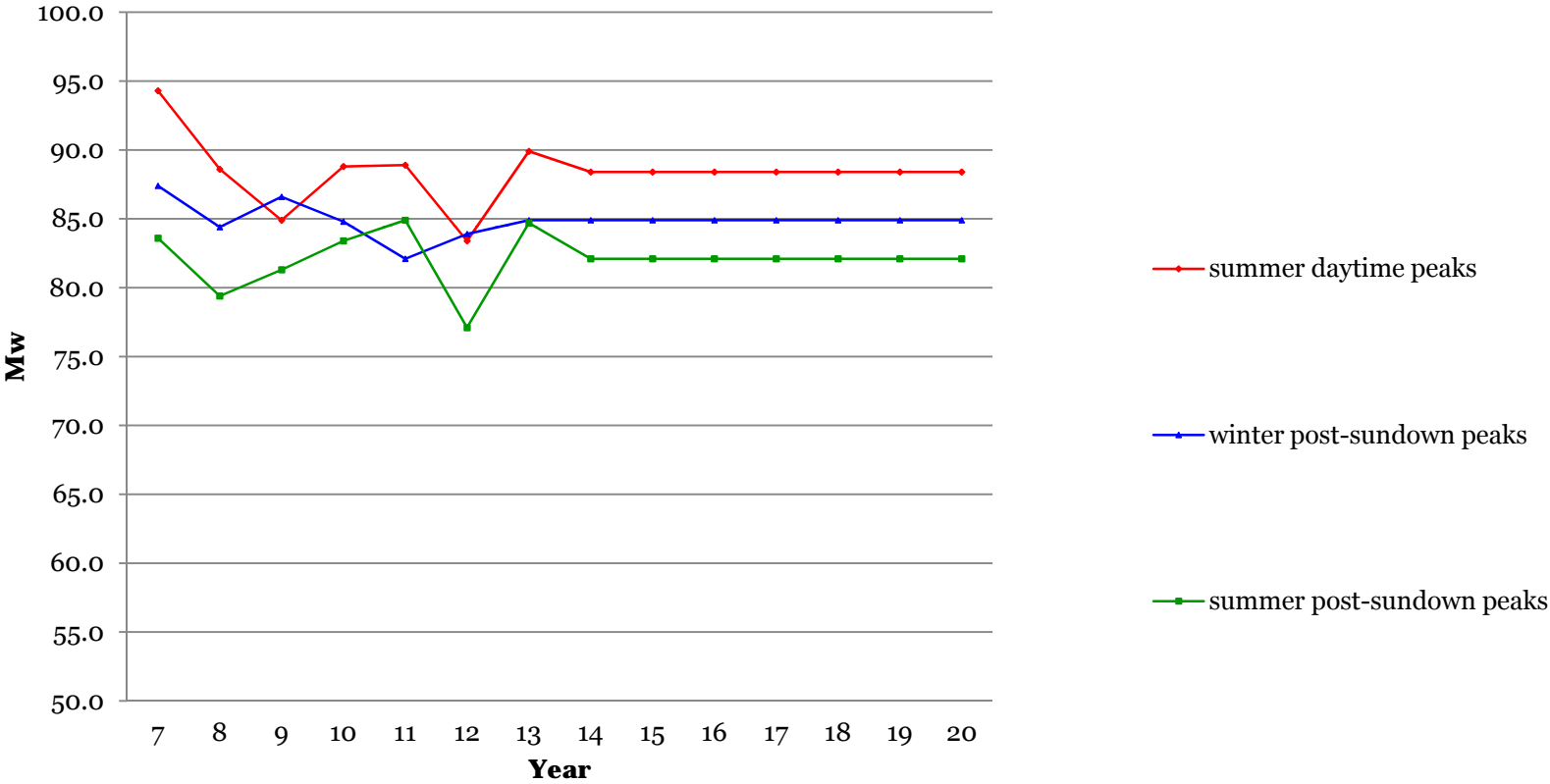
On average, **summer post-sundown peaks** are 93% as high as **summer daytime peaks**.
On average, **winter post-sundown peaks** are 96% as high as **summer daytime peaks**.



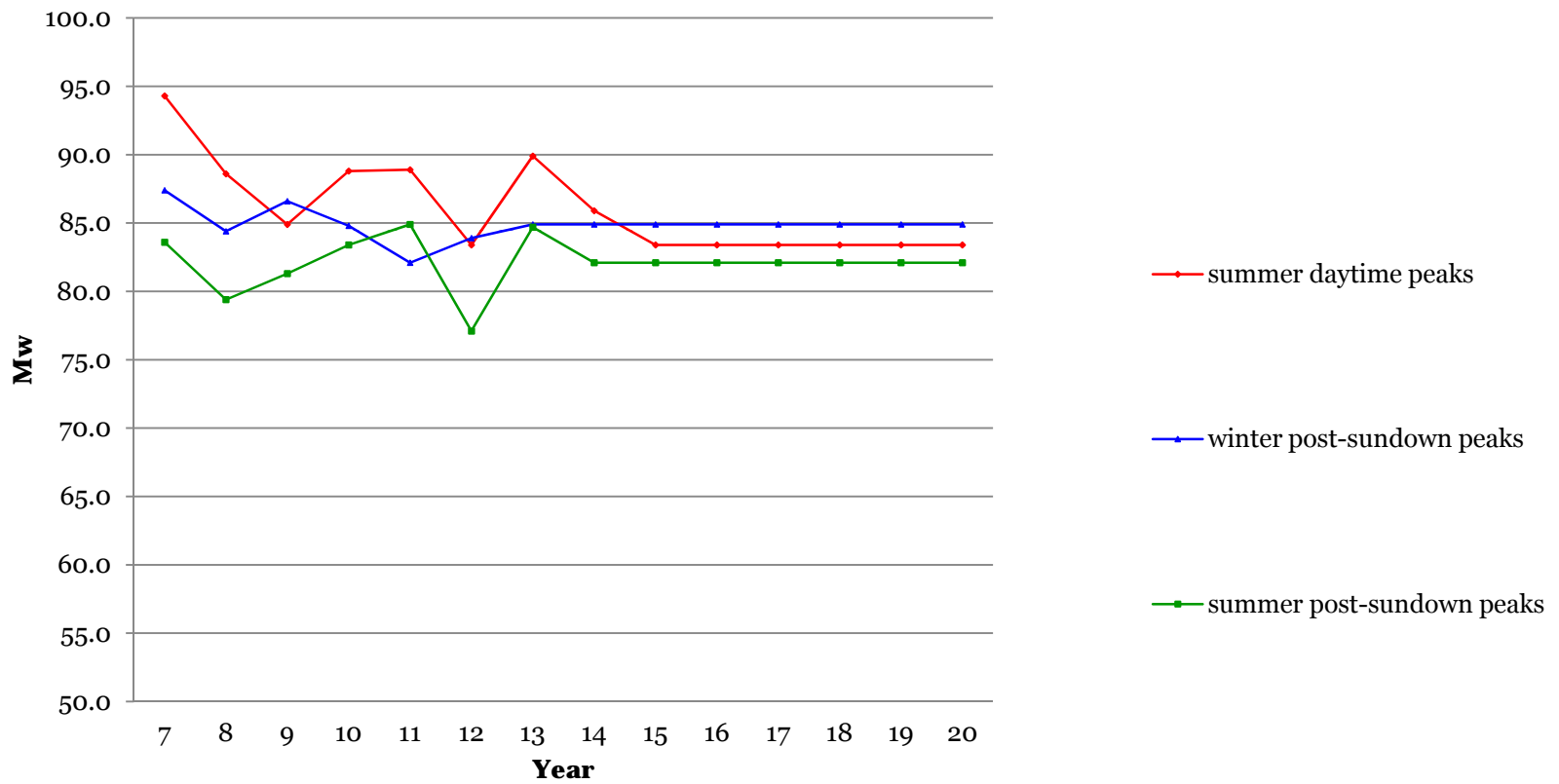
Note that winter daily peak loads are typically after sundown anyway

- ◆— summer daytime peaks
- ▲— winter post-sundown peaks
- summer post-sundown peaks

2007-2020 Rutland-area peak demand (2014-2020 values are simply prior averages)



2007-2020 Rutland-area peak demand
 (red line assumes daytime solar contribution increases
 by current "Solar Capital" goals x 50% cap. factor)



Conclusions



1. Within a relatively short time (several years) daytime net loads in the Rutland area will no longer peak during daylight hours, even in summer. Instead, the peaks will be later in the day, probably near sundown.
2. The emergence of TOU rates and EV charging may add to the post-sundown peaks and perhaps move them to later evening hours.
3. Heat pumps may add to electric demand at all hours.
4. Planning studies for the Rutland area must recognize these new peak load times and magnitudes going forward.
5. Forecasts of growth in the area's solar capability, as well as considerations of time-of-day, time-of-year, zenith/declination angles, and tracking, will quickly become unnecessary because these factors will not influence post-sundown net load, which will become the new daily peak load value within a few years.

Next steps



1. Starting with the assumptions of static area load going forward, adjust base cases to reflect post-sundown peak load and whatever non-solar resource additions (e.g. EE, Standard Offer wind and biomass) are anticipated within ten years.
2. Rerun critical contingencies using these updated base cases.
3. Include sensitivities to test other possible resources.
4. Test all feasible-looking combinations of resources. Adjust resource levels to just meet criteria (Equal Slope).
5. Run economic analysis to determine winners from combinations that just meet criteria.
6. Evaluate potential market-based revenue from generation alternative and include in economic analysis (maybe as a “cost reducer” using PW of all future revenues).
7. Finish up analytical details and report sections; review with VSPC.