Renewable Energy Vermont

Vermont's Clean Energy Economy

10,570 energy efficiency

2,164 solar

1,290 woody biomass

1,259 transportation

412 storage

345 wind

113 hydro

Majority of clean energy companies in Vermont are small businesses with 5 or fewer employees.

Meet us
workingvermonters.org

Weather Events Increasing Electricity Costs

Since 2000, VT suffered more than one federally-declared weather-related disaster every year.

GMP:

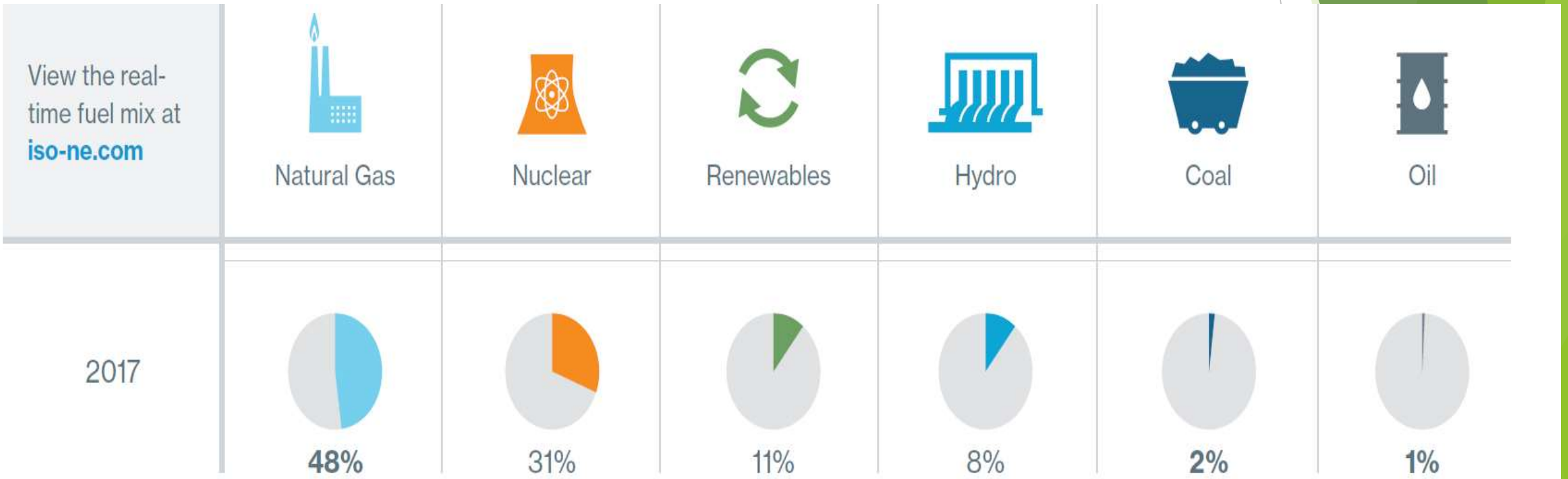
- $34 Million dollars due to storms since 2013
- Average of $8 Million Every Year

Washington Electric Coop:

- $156,000 net operating loss in 2017 due to a single storm

Sources:
https://floodready.vermont.gov/flood_costs
Prefiled Testimony of Edmund F. Ryan on Behalf of Green Mountain Power (6/4/2018)
Washington Electric Coop 79th Annual Membership Meeting Annual Report (2018)

ISO-NE: Regional Electricity Sources



Source: ISO-NE New England Power Grid 2017–2018 Profile

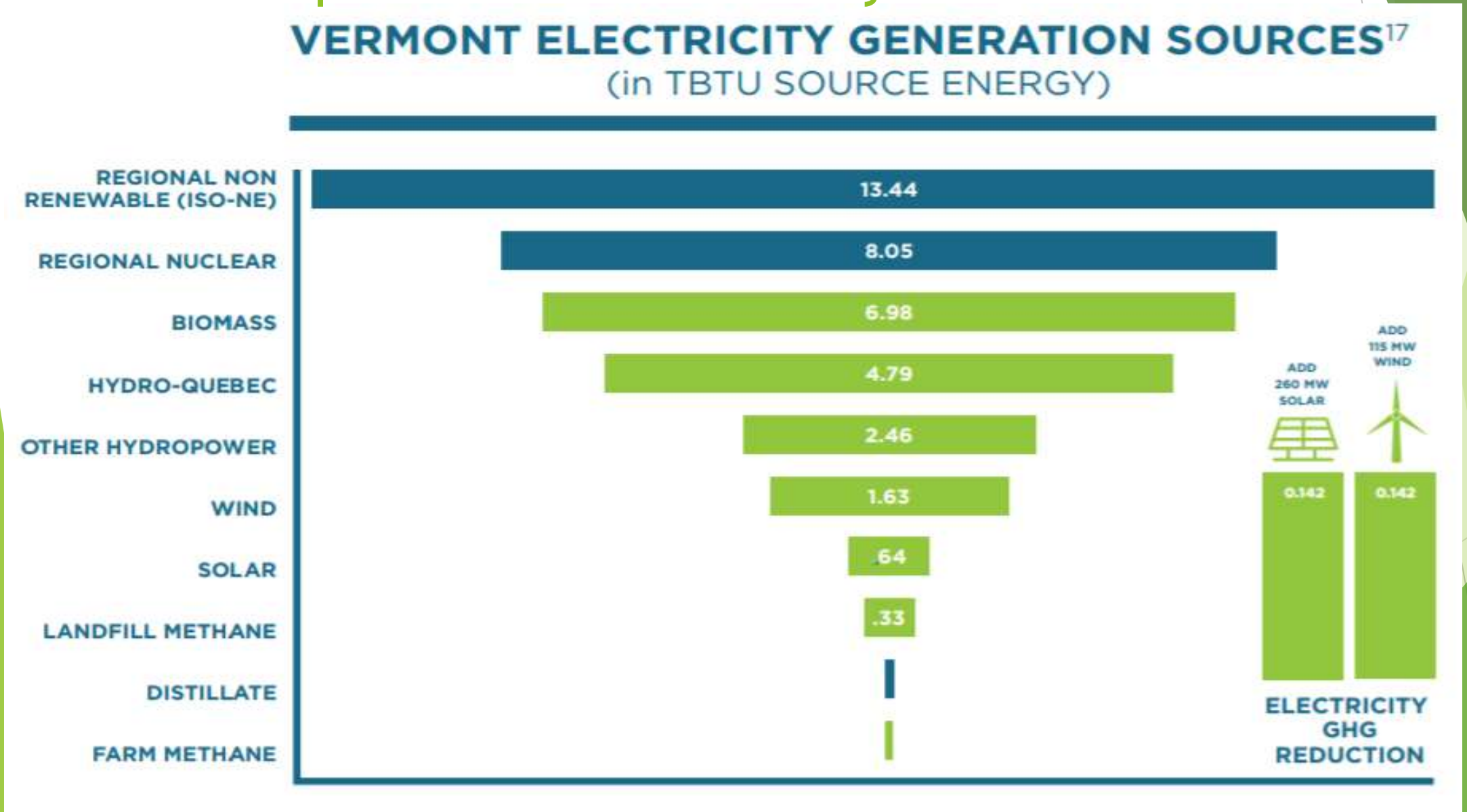
MOST ENERGY DOLLARS FLOW OUT OF VERMONT

We Are Moving in the Wrong Direction!

- ***Vermont spends over $3 Billion annually on energy.***
- ***90% of Vermont's total energy is imported from out-of-state and out-of-country.***
- ***Large majority of Vermont's electricity is imported from out-of-state.***

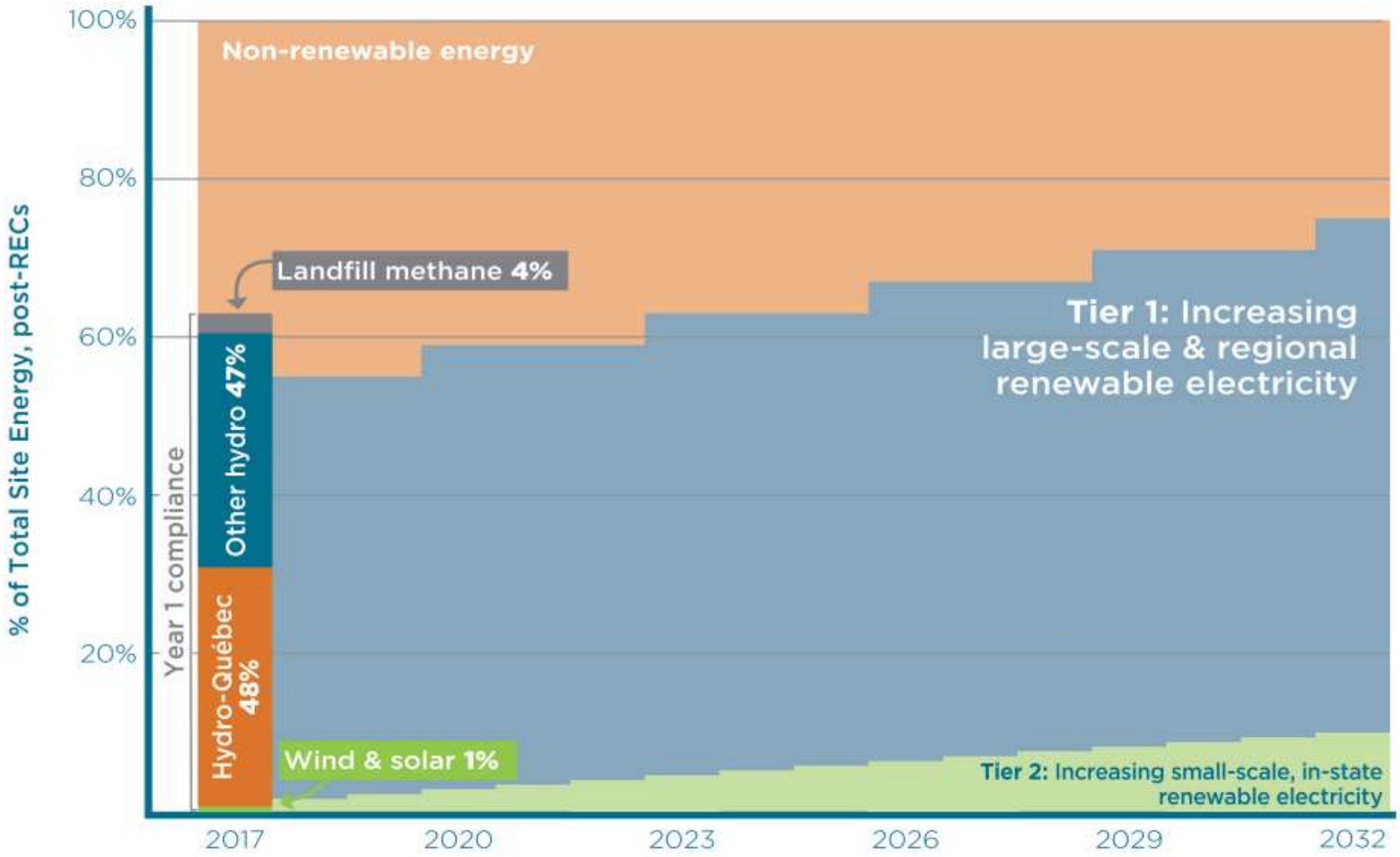
Sources: Energy Action Network Vermont Electric Generation Data for 2016; eanvt.org
Energy Information Administration; www.eia.gov/state/data.

VT imports 60+% electricity from NE & HydroQuebec
→ inadequate local community renewables



We need more local community renewables

Vermont Renewable Energy Standard



Source: Department of Public Service, 2017 generation and REC data.

ENERGY ACTION NETWORK

Innovations in Solar

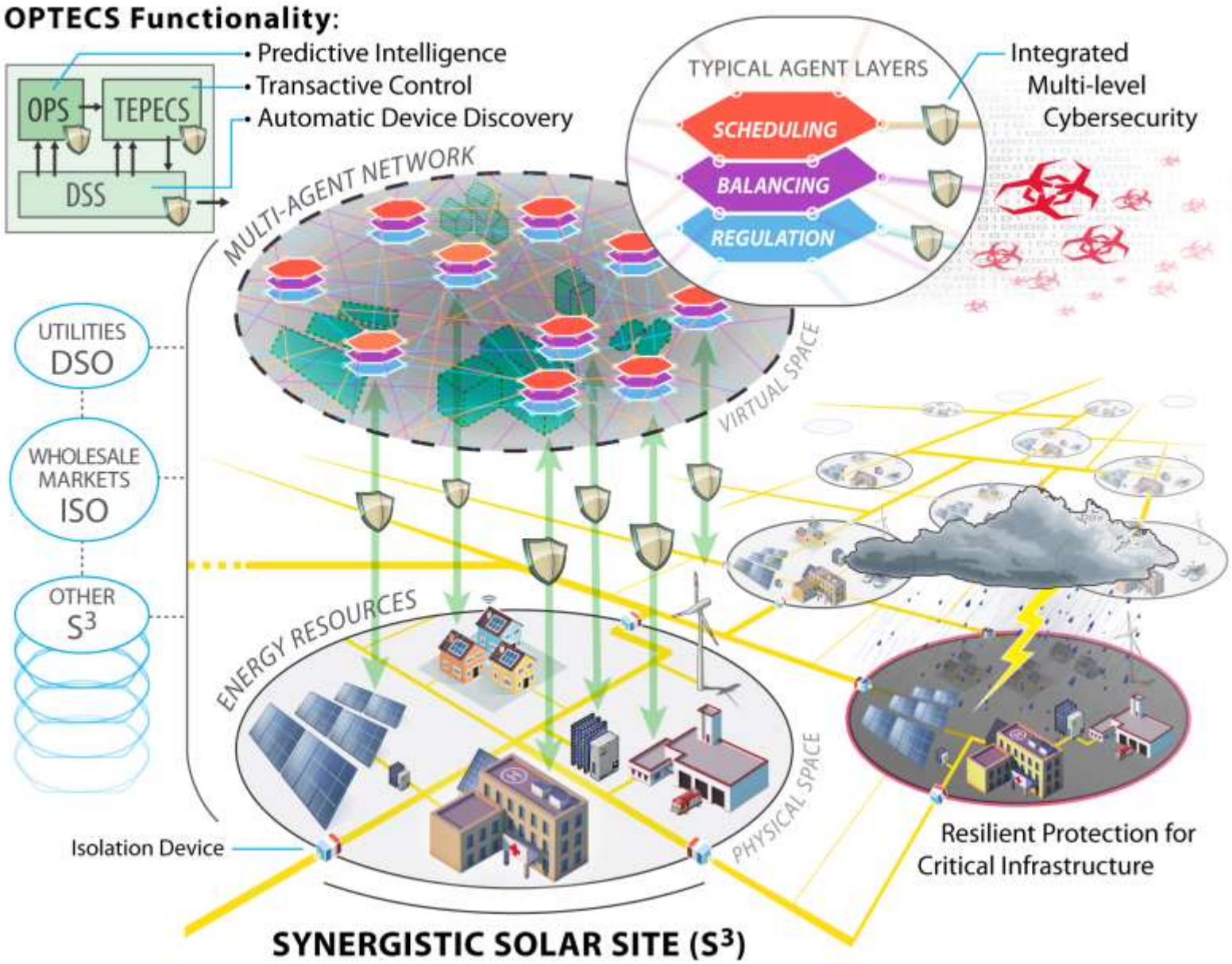
SunCommon's Solar Canopy

- ✓ Enables solar over driveways, parking lots, patios, woodpiles, etc.
- ✓ Generates enough solar for the average Vermont home
- ✓ Glass solar panels absorb light from both the front and back to take advantage of the snow
- ✓ No upfront cost, low-interest financing

Pollinator-Friendly Solar

- ✓ Uses land under solar arrays to plant native plant species
- ✓ Creates habitat for bees, birds & other threatened pollinators
- ✓ Improves storm water management & soil quality
- ✓ Example in VT: South Ridge Solar Field in Middlebury
  - ❖ Collaboration between Middle Road Adventures & "Bee the Change"

Grid Modernization



SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. Department Of Energy

Renewable Energy Storage

- ✓ Increases grid reliability, resiliency, integrity, and stability
- ✓ Helps residents and businesses manage electricity use, lowering costs
- ✓ Lowers costs to ratepayers by reducing electricity demand during peak periods when additional supply is needed
- ✓ Helps avoid costly distribution and transmission infrastructure upgrades, reducing costs to ratepayers
- ✓ Provides backup power when the grid is offline
- ✓ Replaces fossil fuel powered backup generators
- ✓ Reduces greenhouse gases
- ✓ Maximizes use of VT produced renewable energy
- ✓ Supports economic growth

Why is Net-Metering So Important?

- **Local renewables via Net-Metering** is the only real opportunity Vermonter's have to **choose where we get our power**
- **Local renewables** keep our **electricity dollars in-state**, creating jobs and a sustainable economy.
- **Local renewables** allows Vermonters to do **our part in mitigating the climate crisis.**

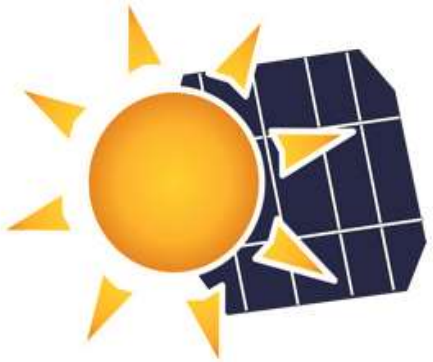
LOCAL SOLAR POWERS Vermont's ECONOMY

- **Local Customers** – Net-Metering customers are Vermonters… our Schools, Towns, Businesses and Citizens.

- **Local Jobs & Local Returns** - a typical Net-Metered school system creates **11 FTE jobs** in Vermont and **invests $700,000** in the local labor force. By choosing to generate its own power, a typical school **saves $500,000** over the solar array's lifetime.

- **Local Investment** - a typical Net-Metered school system generates **$2,000,000 in economic activity** and brings **$1,000,000 in federal tax dollars** into Vermont.

Solar in Vermont



In 2016, for every **1kW** of net metered solar, electric ratepayers **saved 6 cents** in lower regional capacity and transmission charges.[5]

Independent Expert Analysis Shows Local Benefits

Economic

1,535 full-time jobs in solar trades & **$22+ million** added to the local economy in 2017

Health & Environmental

$1+ million/year in emissions reductions CO2, NOX, SOX

Utility

Increased grid efficiency & modernization; substations, line improvements, etc. paid for by net metered customers.

Community

$1.7 million/year in state tax revenue annually in just the Green Mountain Power service territory.

For Less Than a Nickel a Month
Net Metering Creates Many Benefits for Vermonters

[5] *Tariff Filing 8618 2017 GMP Base Rate Filing; Larkin & Associates, PLLC. Analysis of Rate Year Ending September 30, 2017, Green Mountain Power Corporation*

Increasing Local Solar = Tremendous Benefits

*"by 2050 Vermont would see about **$8 billion of net benefits**…. This does not include the value of reducing carbon dioxide or other environmental benefits. Those benefits are in addition to $8 billion in net savings."*

www.veic.org/vermont-solar-pathways

Vermont Energy Investment Corporation

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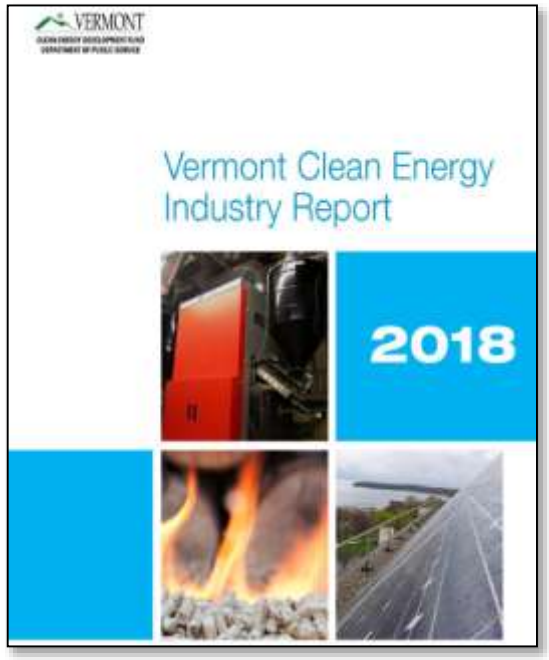
VERMONT CLEAN ENERGY INDUSTRY REPORT



*"The state is home to approximately **18,800** clean energy workers."*

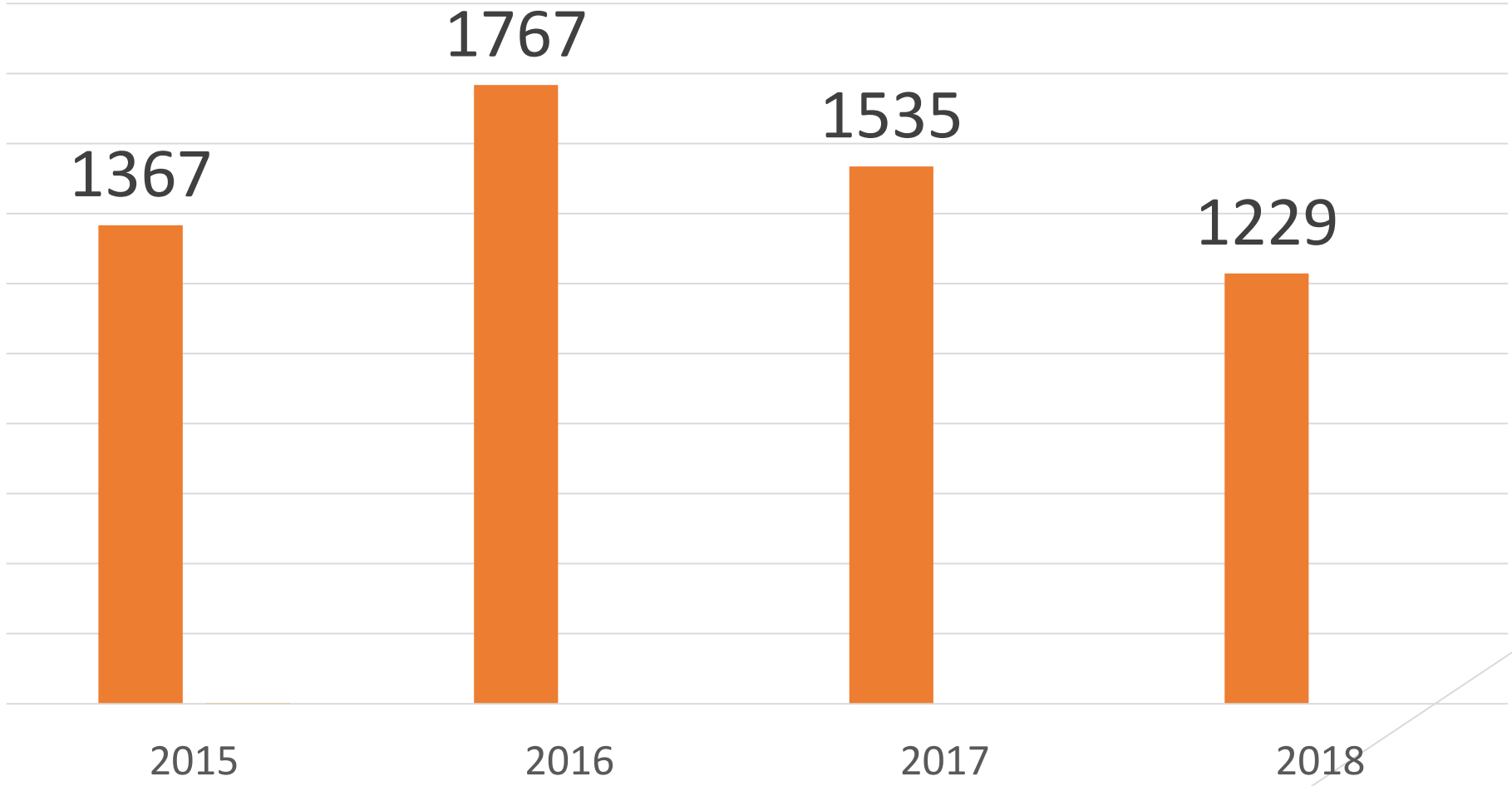
*"Clean energy jobs in Vermont provide higher median hourly earnings—about **$26.71**."*

"[S]olar jobs do remain the largest segment of Vermont's renewable electricity workforce, accounting for just over a third of total renewable energy workers"

*"**For the first time since the Vermont Clean Energy Industry Report's inception in 2013, the state's clean energy economy exhibited a decline in employment, driven largely by losses in the solar industry**. … In Vermont, the shedding of [215] solar jobs came alongside a decline in solar installations over the same period of about 9%."*

Source: https://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/CEDF/Reports/VCEIR%202018%20Report%20Final.pdf at 3, 5.

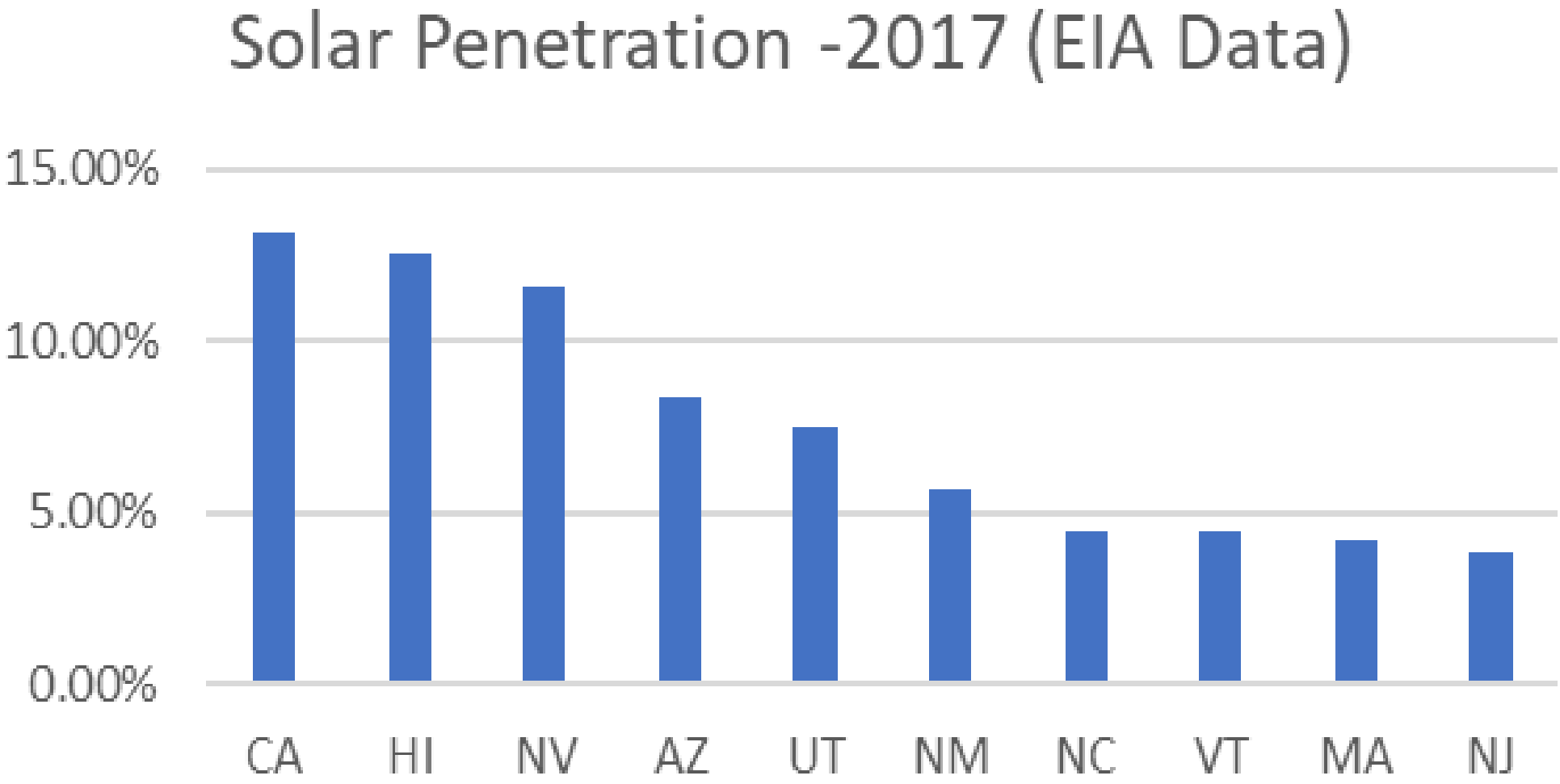
Vermont Lost 538 Solar Jobs in last 2 years



Project Capacity	7/1/2017 - 2/12/2018	7/1/2018 - 2/12/2019
<= 15 kW	1,586	1,070
15 kW - ≤150 kW	76	71
>150 kW - <500 kW	2	8
500 kW	15	12
Total	1,679	1,161

New Solar Project Applications Dropped 31%

VERMONT BEHIND OTHER STATES



OTHER STATES INCREASING RENEWABLE ENERGY, JOBS, & CLIMATE ACTION

- ✓ All new California homes required to install solar starting in 2020
- ✓ D.C., Hawaii, New York, Massachusetts (AG)plan for 100% renewable electricity
- ✓ MA SMART program will double solar in Massachusetts from 1.6 Gigawatts to 3.2 GW in next several years.
- ✓ California required all new buses be carbon free within next10 years
- ✓ CA, CT, DE, LA, MD, NY, OR, PA, TX, DC offer electric vehicle purchase incentives
- ✓ Massachusetts, New York, California, Oregon requiring energy storage procurement
- ✓ New York, Maryland, Hawaii, and California offer incentives for energy storage

Growing Vermont's Economy & Meeting Commitments

- Improve the integrity, transparency, and effectiveness of Vermont's energy laws to:
  - ✓ Create resilient communities
  - ✓ Enable choices for Vermonters
    - give people information so that they can have more tools and decisions over their energy uses and needs
    - Fair market competition leads to lower prices for all & innovation
  - ✓ Meet our climate economy commitments
- Buy local, eat/drink local, energize local
- Increasing participation & access to renewable energy solutions for ALL Vermonters, equitable opportunities for low & moderate income neighbors

Challenges & Opportunities Ahead

- Maintaining & Increasing Local Renewable Electricity Access
  - Restoring residential community solar (H.366)
  - Eliminating limits for schools, towns and all customers for net metered renewable electricity (currently limited to no more than 500 kW, regardless of building or solar project location) (H.423)
  - Maintain the Standard Offer program (H. 155)
  - 100% Renewable Energy Standard by 2030
- Permitting Burdens Slowing Progress & Increasing Energy Costs
  - Require timelines for PUC review of CPGs (H. 366)
  - Streamline permitting for parking lot canopies (H.366)
- Catalyzing Renewable Energy Storage & Grid Modernization
  - Establish storage procurement / peak load reduction requirements
  - Incorporate storage into renewable energy programs
  - Encourage utilization of VT manufactured storage solutions

PUC Disposition of Net Metering vs. Telecom Cases

FISCAL YEAR 2018 (7/1/2017 -6/30/2018)							
	Net Metering CPGs (not inc. registrations)				Section 248a Telecommunications CPG		
	Total Filed	**80**			**Total Filed**	**154**	
Time to Disposition	60 days	6	8%	Time to Disposition	60 days	129	84%
	61-90 days	13	16%		61-90 days	21	14%
	91-180	23	29%		91-180 days	2	1%
	181+ days	19	24%		181+ days	1	1%
	withdrawn/dismissed	5	6%		withdrawn/dismissed	1	1%
	Pending on 2/9/2019	**14**	**18%**		**Pending on 2/9/2019**	**0**	0%

Data from ePUC. Disposition from date of filing to final order/CPG.
Net metering CPGs = "Applications" and "Petitions" under PUC Rules 5.106 and 5.107.
Only 4 of the pending net metering cases were ordered a hearing.

Need to create efficiency in government operations and certainty for Vermonters generating their own renewable electricity by establishing clear timelines / process and certainty for CPG application review and permitting.

REV proposes language mirroring existing statute related the Public Utility Commission's timelines for review of local telecommunications and wireless projects.

Resources

Vermont Renewable Energy Business Listing

Show 10 entries Search:

Business Name	Technology Type	Type of Installer	County, State	REV Member	Former "Partnership Program Participant"*	Number of years in Business	Number of systems installed	Amount of MW, kW, BTU's Installed	Business Structure (LLC, S-Corp etc.)	Credentials
Acorn Renewable Energy	Solar PV	Community	Addison, VT	Yes	No	8	2	300 kW	Co-Op	
AllEarth Renewables	Solar PV	Commercial	Chittenden, VT	Yes	Yes (Full PV)	5+	3,800+	22,800 kW	S-Corp	
Building Energy	Solar PV, Solar Hot Water	Commercial, Residential	Chittenden, VT	Yes	Yes (Full PV, Full SHW)	9	200 (PV), 60 (SHW)	1.6 MW (PV), 227 kW (SHW)	S-Corp	Solar Certified Engineer
Bourne's Energy	Wood Pellet Boilers	Commercial, Residential	Washington, VT	Yes	No					
Catamount Solar	Solar PV	Commercial, Residential	Orange, VT	Yes	Yes (Full PV)	5	400		LLC	
Cutting Edge Energy	Wood Pellet Boilers	Residential	Caledonia, VT	Yes	No	5	100		LLC	
DC Energy Innovations	Solar PV, Wind	Commercial, Community, Residential,	Chittenden, VT	Yes	Yes (Full PV, Full Wind)	14	70	1.3 MW (PV), 240 kW (Wind)	S-Corp	Master Electrician, NABCEP Certified
Encore Renewable Energy	Solar PV	Commercial	Chittenden, VT	Yes	No	9	40	15 MW	LLC	
Energy Emporium	Solar PV	Commercial, Residential	New Hampshire	Yes	Yes (Full PV)	7	>150	>860kW	LLC	NABCEP
Gary MacArthur Solar	Solar PV	Commercial, Residential	Windham, VT	Yes	Yes (Full PV)	25	100+		Small Business	NABCEP

Previous Next

Find a qualified renewable energy installer

www.revermont.org/vrebl

Share your climate actions, learn from others success
www.vtenergydashboard.org

Olivia Campbell Andersen, Executive Director

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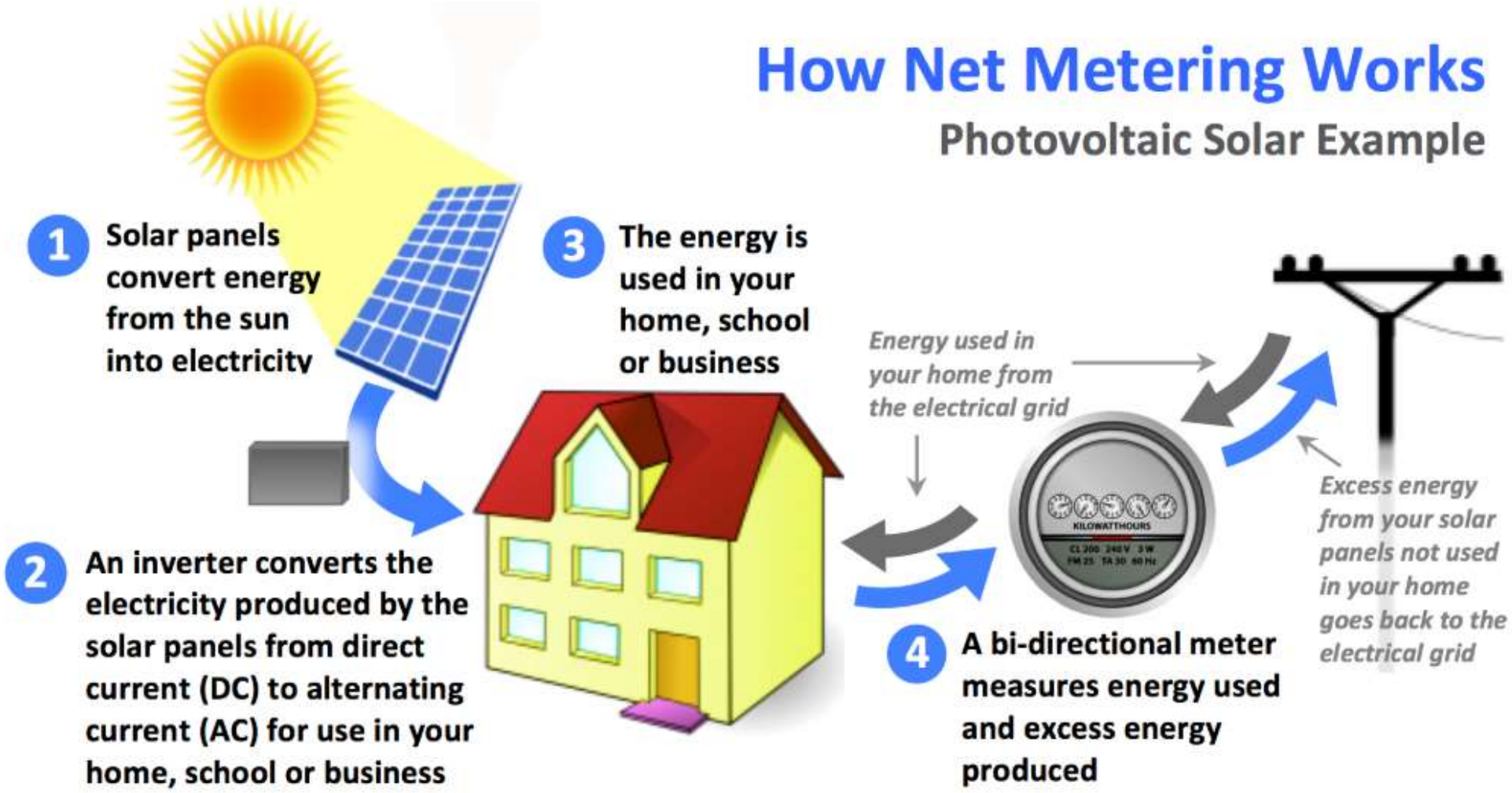
info@revermont.org ✸ 802-595-5373

How Net Metering Works

Photovoltaic Solar Example



Net-Metering is how Vermonters can generate their own electricity and share what they don't use with their neighbors through the grid.

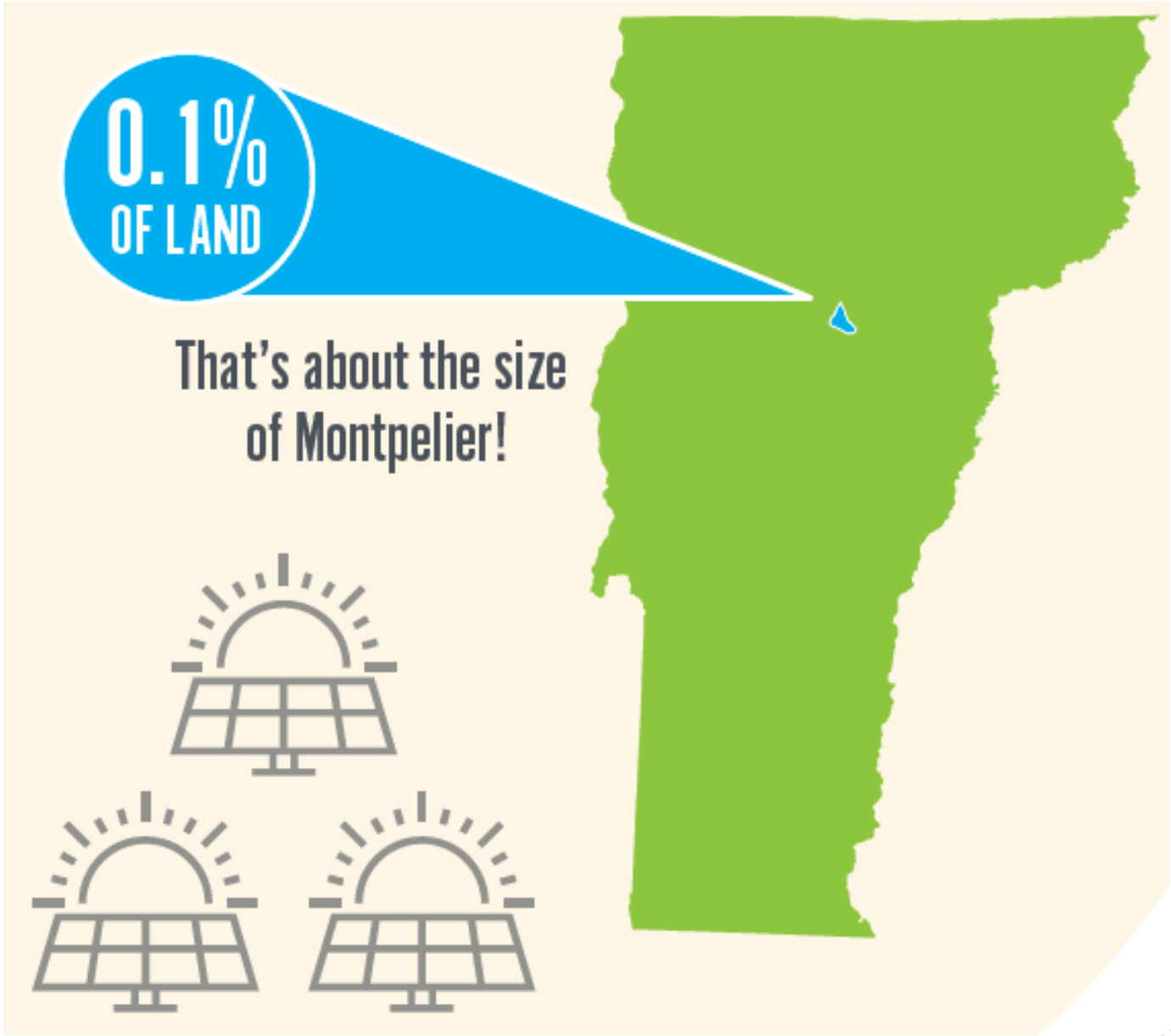
Source: https://greenmountainpower.com/help/net-metering/what-is-net-metering/

Net Metering 3.0

- Compensation based on whichever is lower, the utility's blended residential rate or the statewide average blended residential rate ($0.15417/kWh)
- May not use net metering credits toward non-bypassable charges:
  - Customer Charge
  - Energy Efficiency Charge
  - Energy Assistance Program Charge
  - On-bill financing
- Four categories of Net Metering systems, plus hydro
  - Category I: 15 kW and under = +1 cent/kWh siting adjustor for 10 years
  - Category II: 15-150 kW on preferred sites = +1 cent/kWh siting adjustor for 10 years
  - Category III: 150-500 kW on preferred sites = - 2 cent/kWh siting adjustor for lifetime
  - Category IV: 15-150 kW not on preferred sites = - 3 cent/kWh siting adjustor for lifetime
- 150-500 kW projects allowed only on "preferred locations"
- REC adjustors:
  - +2 cents/kWh credit for ten years if RECs go to utility
    - drops to +1 cent/kWh for CPGs filed after July 1, 2019
  - -3 cents/kWh (debit) for the life of the system if RECs are held by the generator
- Biannual PUC proceeding to revisit adjustors

Current “Preferred” Priority Project Locations”

- On a pre-existing structure
- Parking lot canopies over paved areas
- Previously developed land
- Brownfields
- Landfills
- Gravel pits
- Town-designated sites
- Superfund sites
- On the same parcel as an customer taking 50% or more of the output



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PUC & DPS FINDINGS ON RATES

DPS testimony stated that purchased power is NOT a key driver in rate increases

> *"Over the period, Purchased Power Costs, over which GMP has some limited control, have declined by $33.4 million. … However, these cost reductions, which total $49.2 million, have been more than offset by a $60.2 million increase in rate base (capital and investment)* related costs, over which GMP has significant control."

Source: Case 18-0974-TF, DPS Direct Testimony of Brian E. Winn. August 10, 2018 at 11.

Net-Metering is a Small Fraction of the State's Load

- In its recent rate case, GMP reported that "total [customer self-supply] production (the vast majority of which is solar PV)" was 125,000 MWh for the test year, compared to its total load of 4,400,000 MWh.
- Thus, customer self-supply through net-metering represented only 3% of the total GMP electric load.

Soure: Case No. 18-0974-TF, GMP Rate Case, GMP Direct Testimony of Douglas Smith, April 13, 2018, at 7, 18.