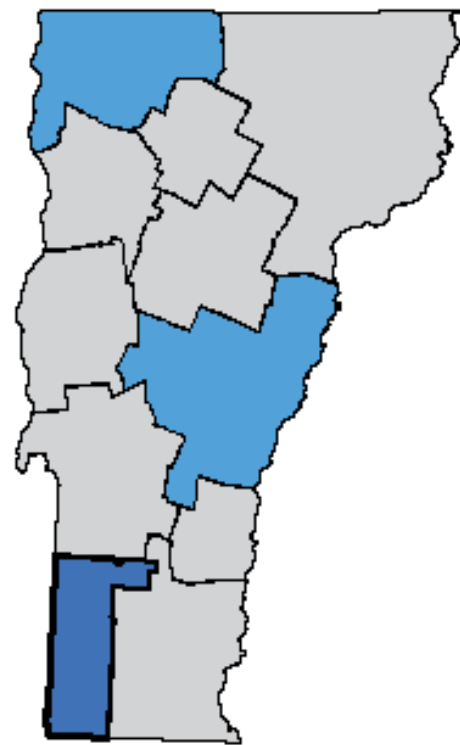
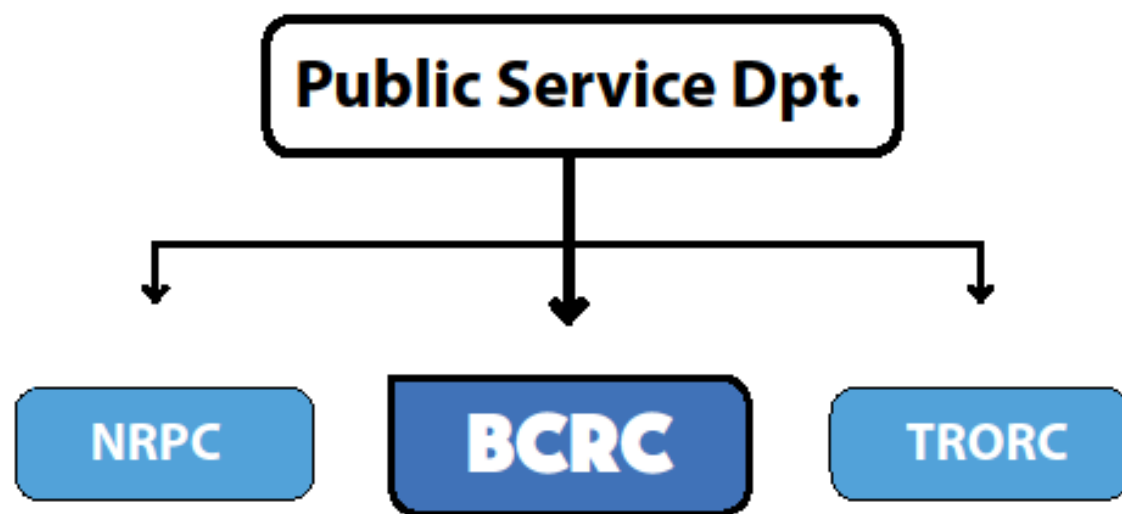


REGIONAL PLANNING INITIATIVE

The PSD is funding three of Vermont's Regional Planning Commissions to create region-specific energy plans that sync with state goals. BCRC is the project lead. Initial plans will serve as pilots for all other regions.

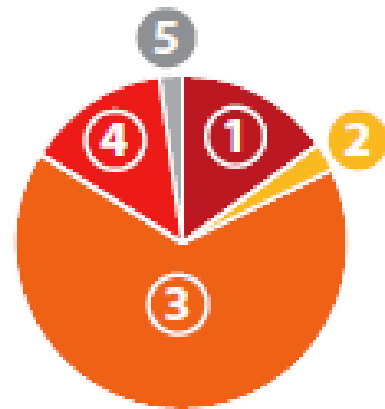
First three plans will be completed in 2016.



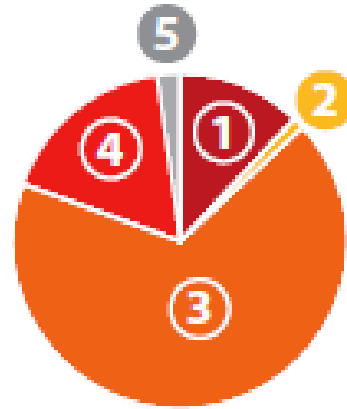
REGIONAL THERMAL ENERGY USE

	Fuel Type: Space Heating	Number of Households	Avg. Use (Annual)	Percent of Use (All HHs)	Percent of Use: Owner	Percent of Use: Renter	Percent of Cost (All HHs)
1	Tank/LP/etc. Gas	2261 HHs	2.3 Mil Gal	15%	12%	22%	26%
2	Electricity	383 HHs	8.1 GWh	3%	1%	7%	5%
3	Fuel Oil	9779 HHs	7.0 Mil Gal	67%	67%	65%	56%
4	Wood	1993 HHs	12.9K Tons	14%	17%	6%	13%
5	Other	269 HHs	-	2%	2%	0%	-

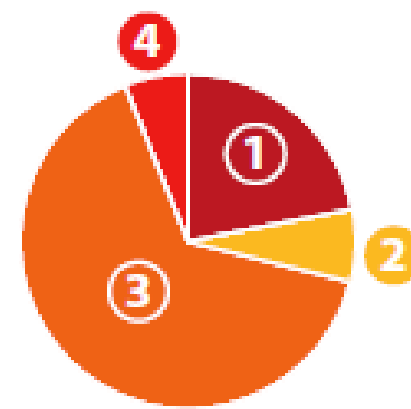
ALL HOUSEHOLDS
Estimated percent of all households using each type of heating fuel in the region.



OWNERS
Estimated percent of owner-occupied households using each type of fuel.



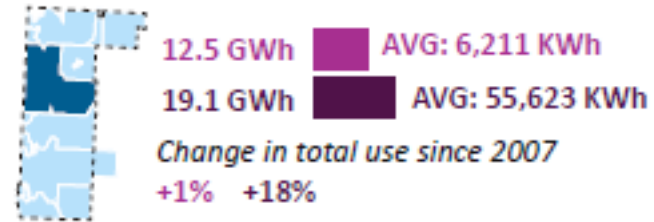
RENTERS
Estimated percent of renter-occupied households using each type of fuel.



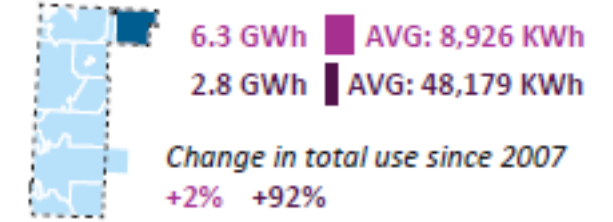
REGIONAL ELECTRICITY USE

2014 BCRC ELECTRICITY USE:
~ 300 GIGAWATT HOURS

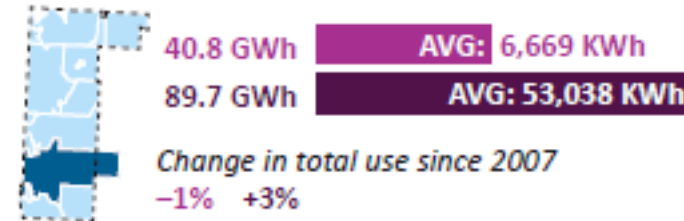
ARLINGTON | ZIP 05251 + 05252



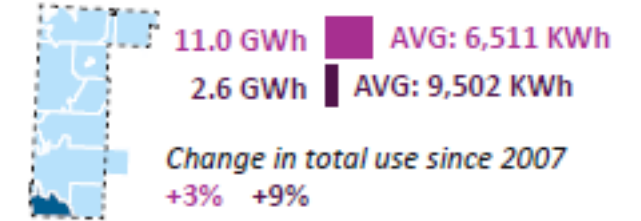
PERU | ZIP 05152



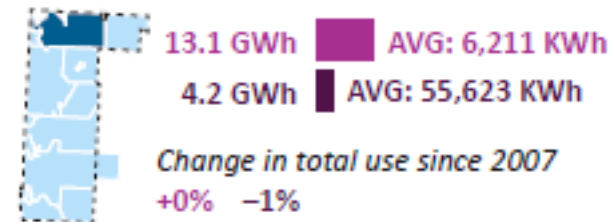
BENNINGTON | ZIP 05201



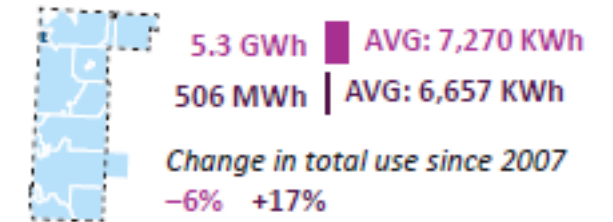
POWNALE | ZIP 05260 + 05261



DORSET | ZIP 05251 + 05253

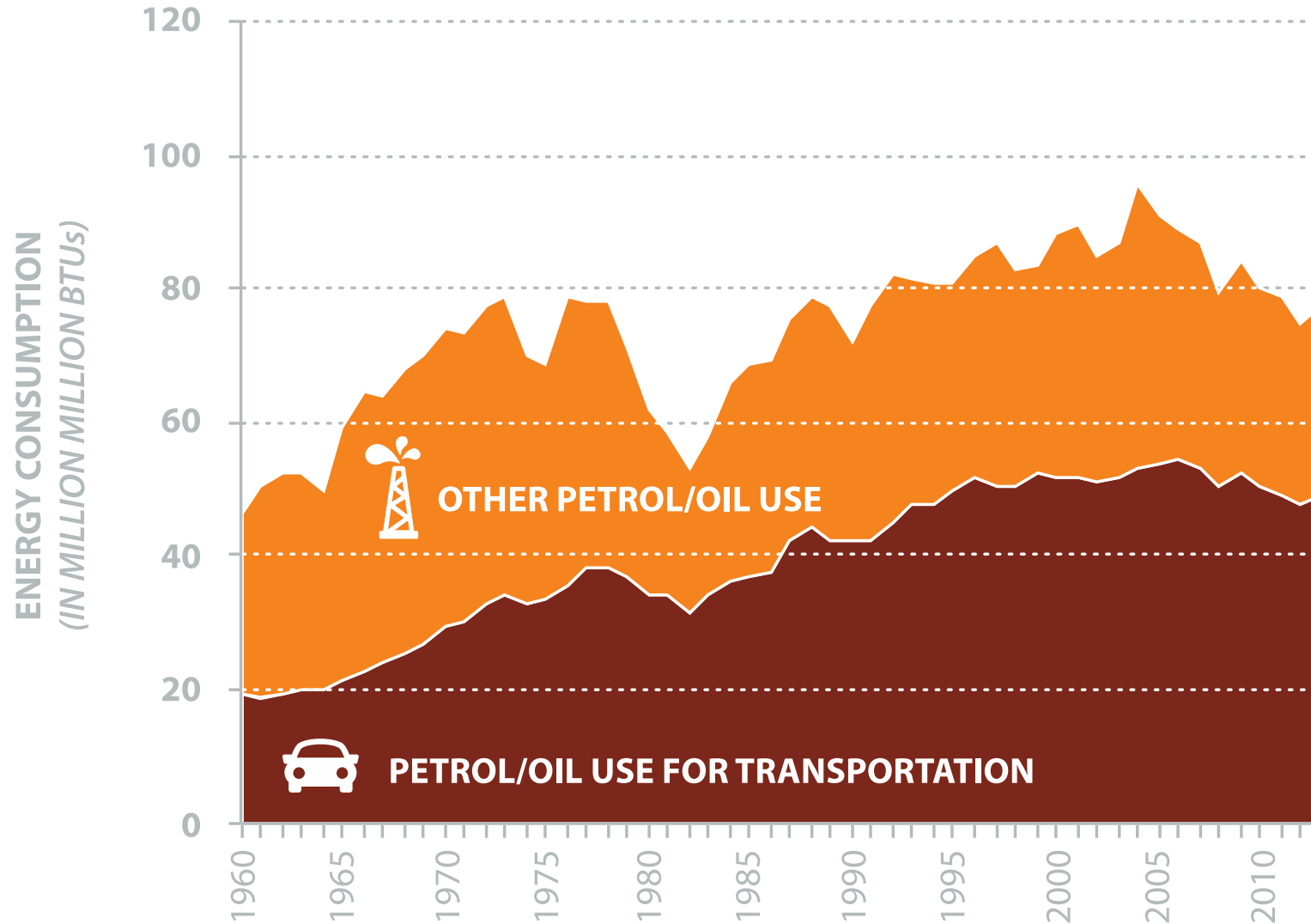


RUPERT | ZIP 05776

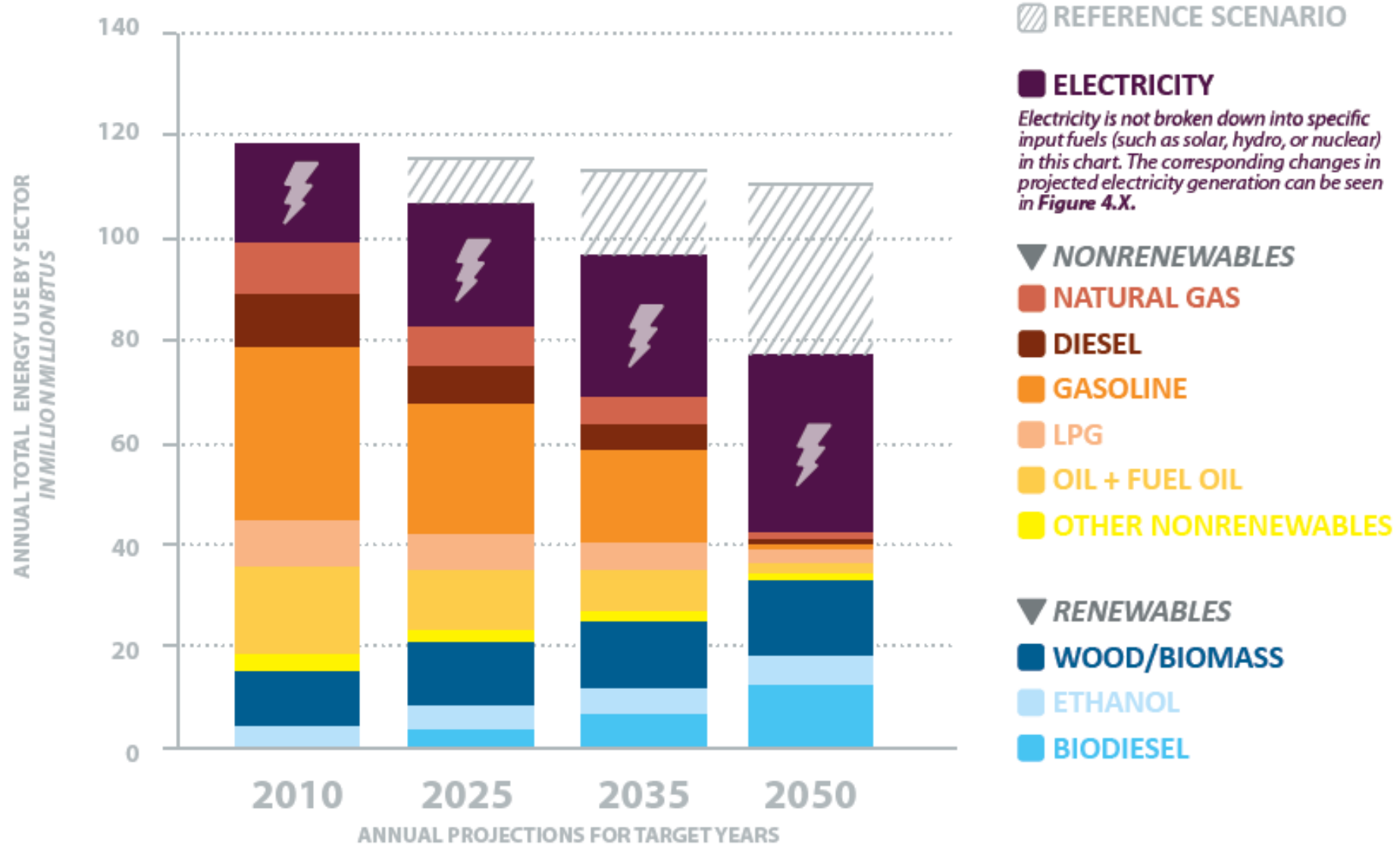


TRANSPORTATION OIL USE

AS A PART OF OVERALL OIL USE



Vermont Energy Demand by Fuel Type: 2010 - 2050



Bennington Region

Residential Energy Demand: 2010 - 2050

ELECTRICITY
 Electricity is not broken down into specific input fuels (such as solar, hydro, or nuclear) in this chart. The corresponding changes in projected electricity generation can be seen in Figure 4.X.

NONRENEWABLES

LPG

OIL + FUEL OIL

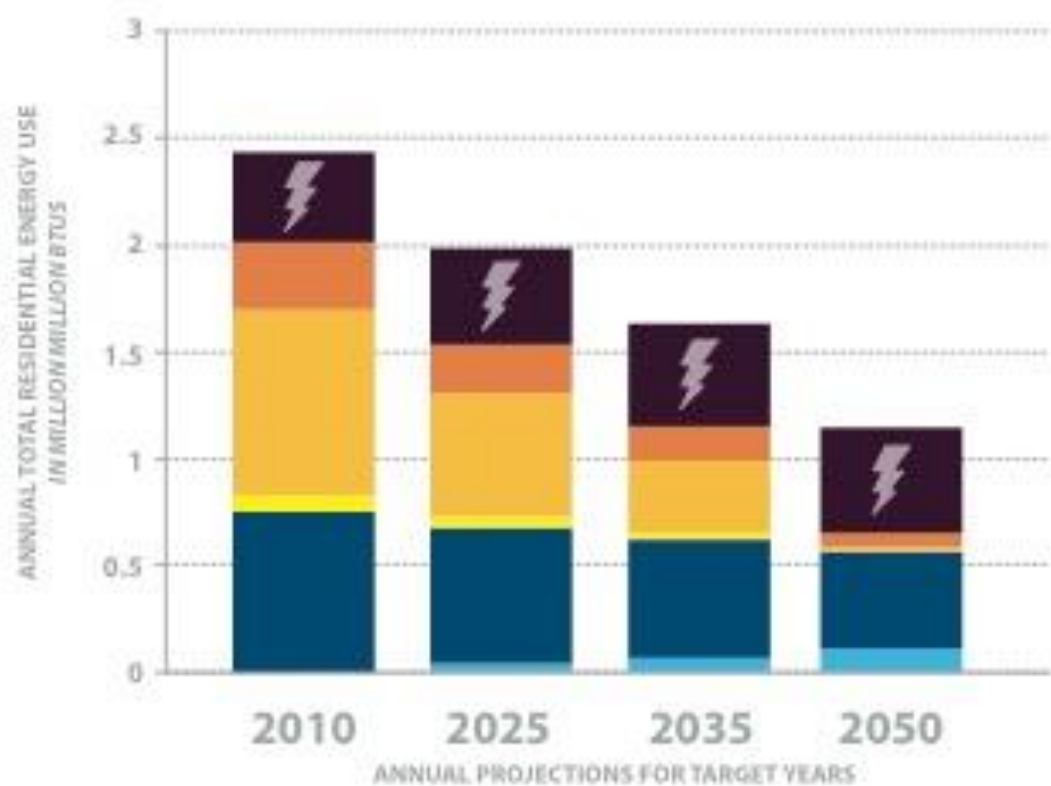
OTHER NONRENEWABLES

RENEWABLES

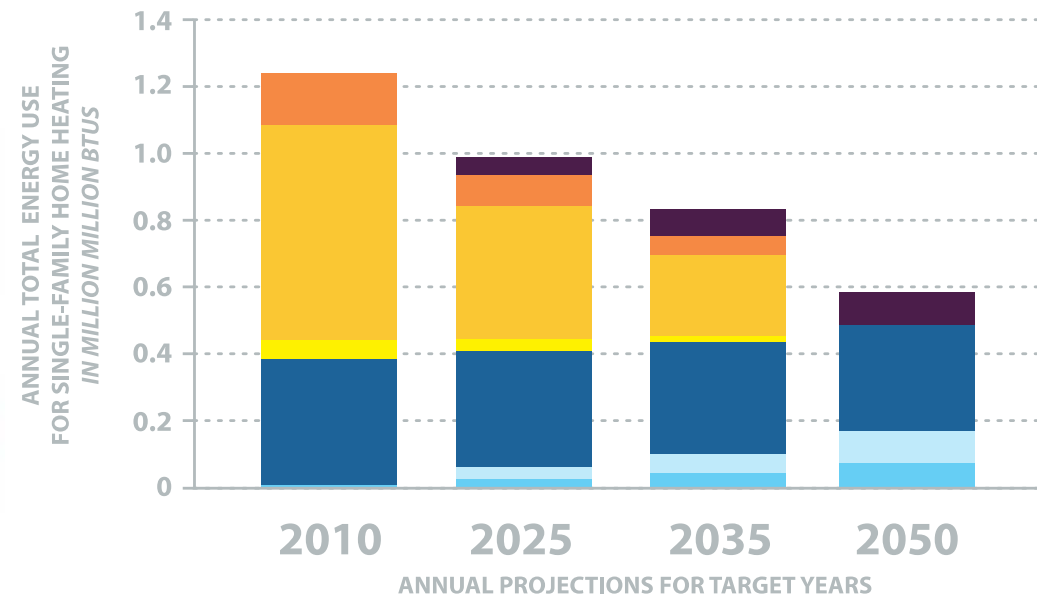
WOOD/BIOMASS

BIODIESEL

BCRC Total Residential Energy



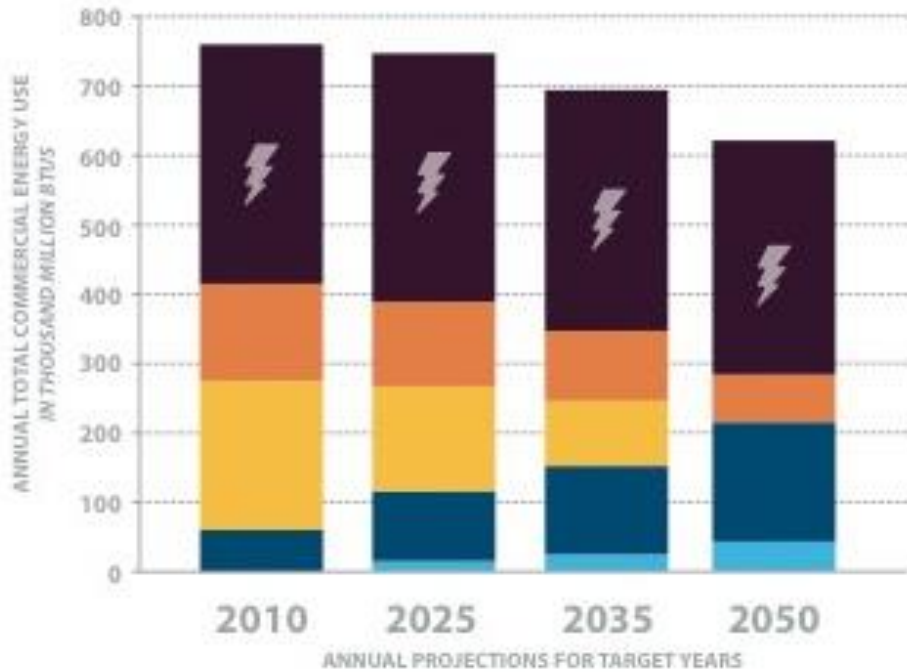
BCRC Single-Family Heating Energy



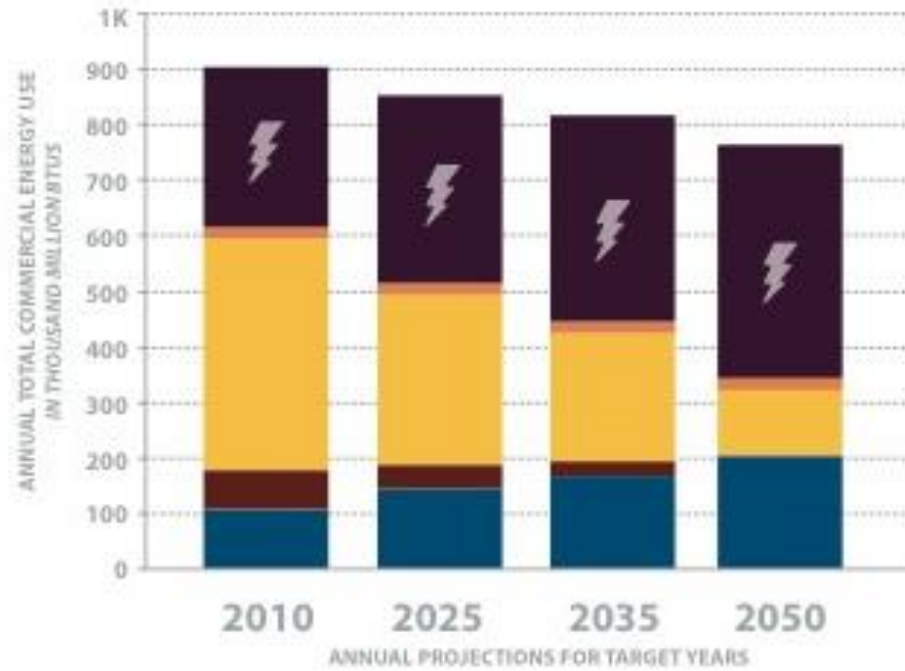
Bennington Region

Commercial and Industrial Energy Demand: 2010 - 2050

BCRC Commercial Energy



BCRC Industrial Energy



ELECTRICITY

Electricity is not broken down into specific input fuels (such as solar, hydro, or nuclear) in this chart. The corresponding changes in projected electricity generation can be seen in [Figure 4.X](#).

NONRENEWABLES

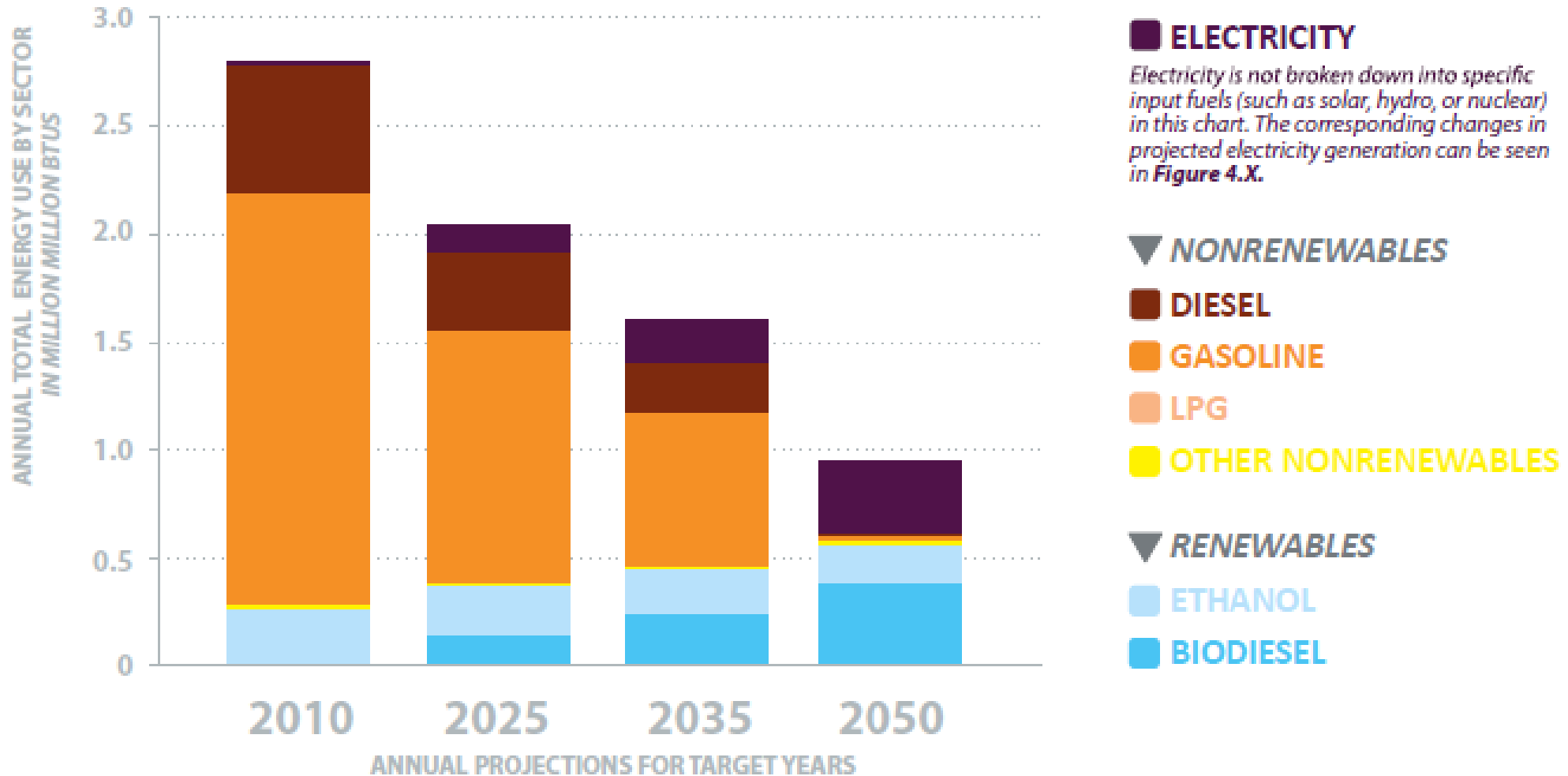
- LPG
- OIL + FUEL OIL
- COAL

RENEWABLES

- WOOD/BIO MASS

Bennington Region

Transportation Energy Demand: 2010 - 2050



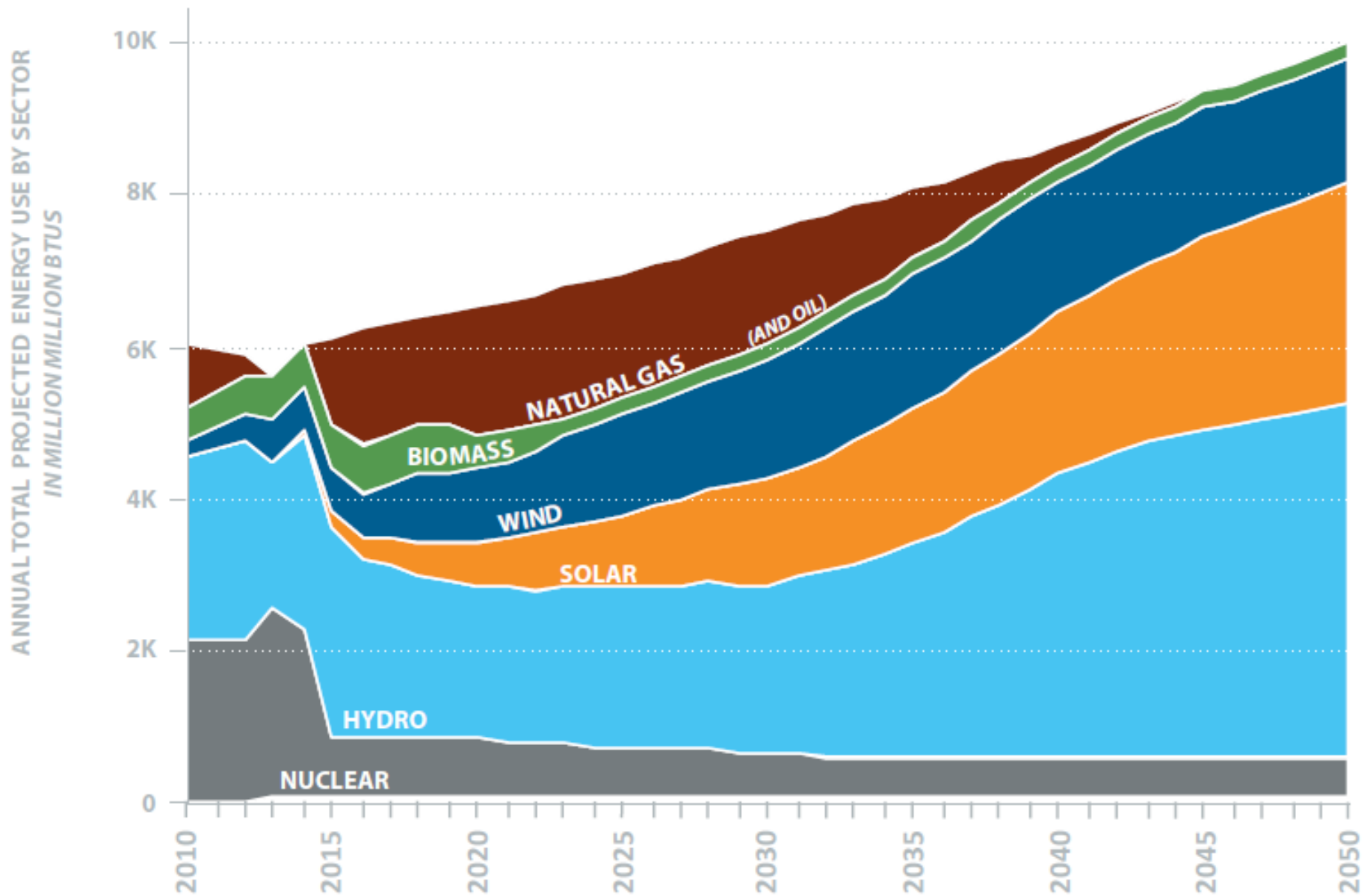
How do we get there?

Strategies developed considering existing resources and programs, ideas from stakeholders and experts in the field, and local input.



- **Thermal:** improving building stock, changing and improving heating systems and fuels.
 - *Example: Work with fuel dealers to encourage them to become energy service providers (ESPs).*
 - Work with Bennington College CAPA program to organize and hold a forum with fuel dealers that have become ESPs.
- **Transportation:** reducing the amount of driving and transforming the vehicle fleet.
 - *Example: Expand the use of electric vehicles throughout the region by supporting education efforts, and availability of EVs and infrastructure.*
 - Replace some municipal vehicles with EVs and provide charging stations at prominent locations in municipal parking lots.
- **Electricity:** continuing efforts at conservation and new in-region generation.
 - *Influence behavioral changes to reduce electricity consumption at the individual level.*
 - The Community Energy Dashboard should be widely publicized and used by the BCRC and local energy committees to illustrate case studies and statistics demonstrating energy savings.

Vermont

Electricity Demand: 2010 - 2050

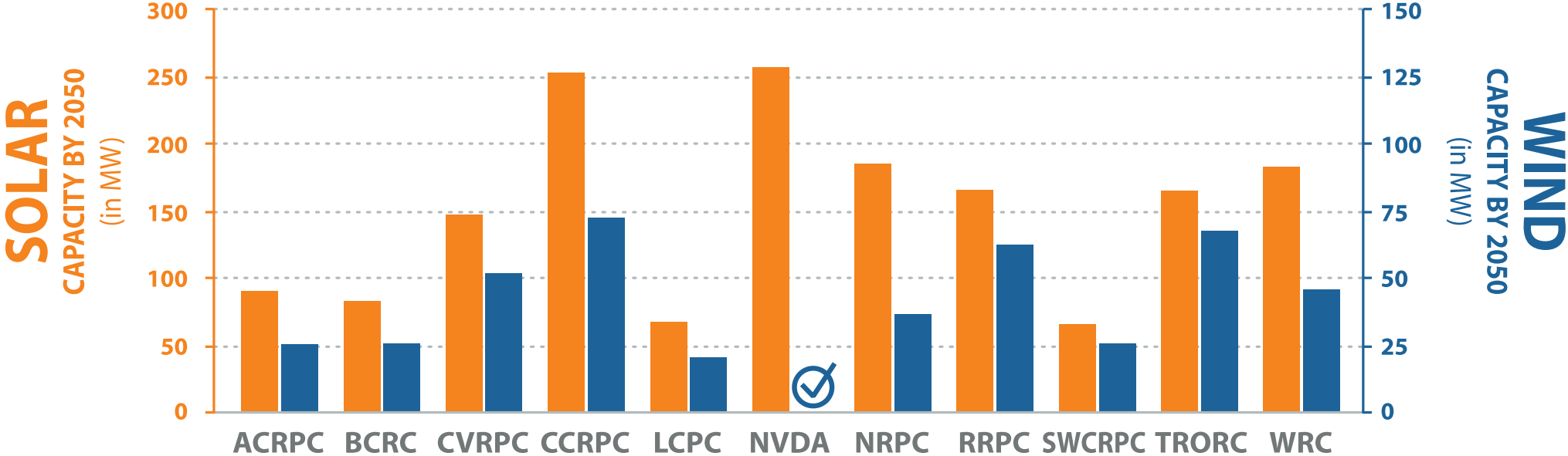


NEW IN-STATE ELECTRICITY GENERATION 2010 – 2050

	YEAR	ELECTRICITY CONSUMPTION (GWh)	NEW HYDRO (MW)	NEW WIND (MW)	NEW SOLAR (MW)
VERMONT 	2010	5,623	-	-	-
	2025	6,991	25	200	445
	2035	8,073	50	400	926
	2050	10,044	93	400	1,647
BCRC REGION 	2010	318	-	-	-
	2025	381	1	16	24
	2035	421	1	28	48
	2050	473	1	28	85

SOLAR AND WIND GENERATION GOAL FOR ALL RPCS

The same methodology, applied to all regions:



Deriving Estimates for New Solar Generating Capacity by Town

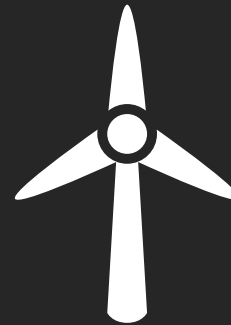
	2014 Population	Prime Solar (Acres)	Prime Solar in one mile of 3-phase (Acres)	Solar Installations (Count, 2015)	Existing Solar Capacity (KW, 2015)	2050 Goal, New Capacity (MW)
Arlington	2,404	589	409	10	63.8	5.3
Bennington	15,633	2,009	1,624	46	425.4	28.4
Dorset	2,055	1,013	806	17	233.3	6.9
Glastenbury	7	12	0	0	0	0.0
Landgrove	199	1,325	233	2	8.2	1.6
Manchester	4,356	1,380	1,348	23	478.9	12.7
Peru	363	1,343	991	4	29.7	6.1
Pownal	3,506	726	303	6	2,240.0	3.9
Rupert	640	596	327	5	55	2.6
Sandgate	528	153	0	0	0	0.7
Shaftsbury	3,580	1,943	538	17	114.3	7.4
Stamford	887	231	178	3	10.6	2.1
Sunderland	911	1,167	997	1	4.3	6.8
Woodford	300	126	22	1	3.2	0.5

Renewable Energy Resource Mapping



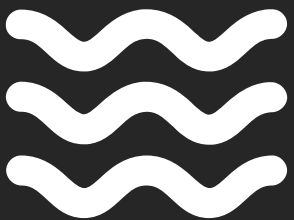
Solar

Topography of land analyzed based on slope and direction (azimuth) conducted in GIS for ground-mounted solar.



Wind

Digitally modeled wind speed (based on topography) analyzed at 3 hub heights



Hydro

Existing dams analyzed for potential capacity based on Community Hydro report. No new dams considered.



Biomass (wood)

Land coverage used to determine location/area of harvestable wood.

② Determined “constraints”, classified as Level 1 or Level 2

Level 1 Constraints

Conditions which would likely make development unfeasible.

These were removed entirely.

- Floodways & River Corridors
- Federal Wilderness
- Rare and Irreplaceable natural areas
- Vernal Pools
- Class 1 and 2 Wetlands

Level 2 Constraints

Conditions which could impact development, but which would not necessarily prevent it.

These are shown on maps in color (where they overlap).

- Agricultural Soils (all ag-rated soils)
- Habitat Blocks (ANR class 9 and 10)
- Hydric Soils
- Conserved Lands
- Special Flood Hazard Areas
- Deer Wintering Areas
- Class 3 Wetlands

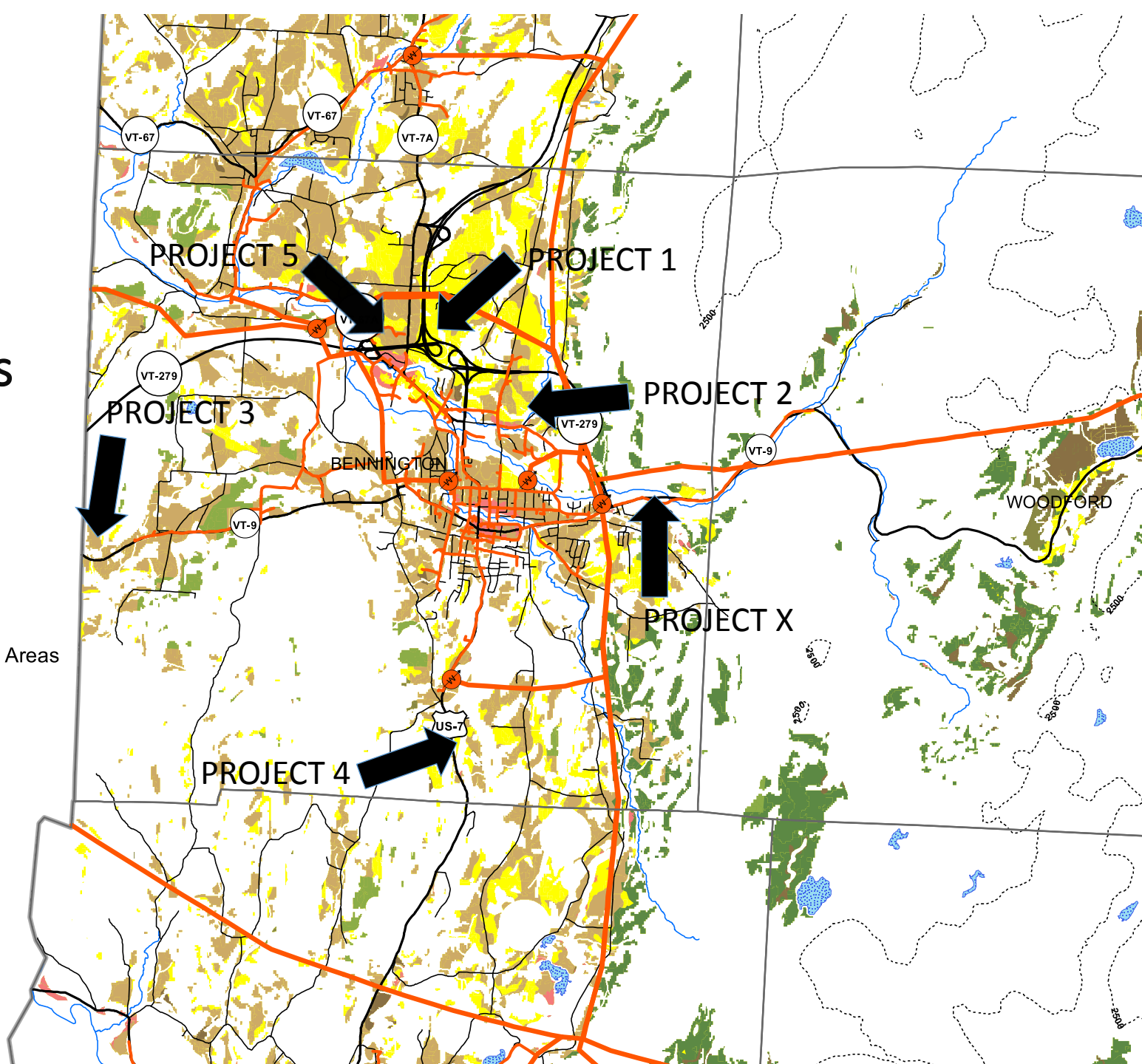
SOLAR MAP

- Prime Solar = Yellow
- Includes Level 2 Constraints

- Substations
- 3 Phase Power Lines
- Transmission Lines
- Major Roads
- Secondary Roads
- Rivers/Streams
- Lakes/Ponds
- 2,500 Ft Elevation
- Prime Solar Potential - No Level 1 or Level 2 Constraints

Level 2 Constraints

- Class 3 Wetlands
- Deer Wintering Areas
- Special Flood Hazard Areas
- Conserved Lands
- Hydric Soils
- Habitat Blocks *
- Agricultural Soils **



SOLAR MAP

ADDITIONAL CONSIDERATIONS = REGIONAL CONSTRAINTS

FOR BCRC:

1. PRIME AGRICULTURAL SOILS SPECIFICALLY IDENTIFIED
(all ag. soils are mapped as level 2 constraints)
2. SCENIC/HISTORIC DISTRICT AREA
3. LOCALLY IDENTIFIED CONSTRAINTS AND OPPORTUNITIES

WHAT ABOUT ROOFTOP SOLAR??

Residential structures in BCRC Region: **14,000**

If 50% are oriented properly and structurally compatible, and 50% of those choose to install systems at an average of 4KW capacity, that's...

14 MW

Small Commercial Structures (less than 40K sq ft): **2,000**

If 50% are oriented properly and structurally compatible, and 50% of those choose to install systems at an average of 20KW capacity, that's...

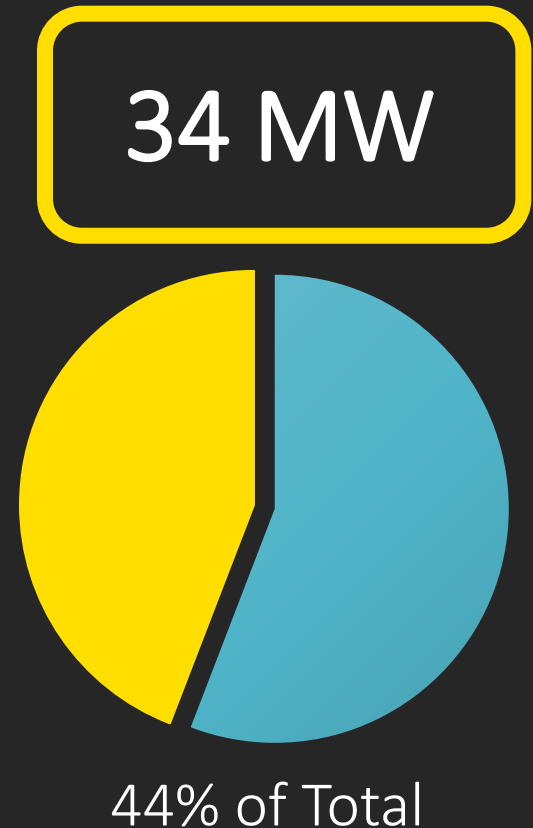
10 MW

Large Commercial Structures (greater than 40K sq ft): **100**

If 50% overall choose to install systems at an average of 200KW capacity, that's...

10 MW

ESTIMATE FOR TOTAL
ROOFTOP POTENTIAL:



**THIS IS THE
AMOUNT OF
LAND AREA
IN THE
BCRC REGION**

(about 370,00 acres, or 575 sq. miles)

**THIS IS THE
AMOUNT OF
THAT AREA
WHICH IS
CONSIDERED
"PRIME SOLAR."**

(about 14,000 acres)



**AND THIS IS ABOUT
THE AMOUNT OF
AREA THAT WOULD
BE NEEDED TO REACH
OUR 2050 GOAL OF
85 MW ADDITIONAL
IN-REGION CAPACITY.**

(about 800 acres)

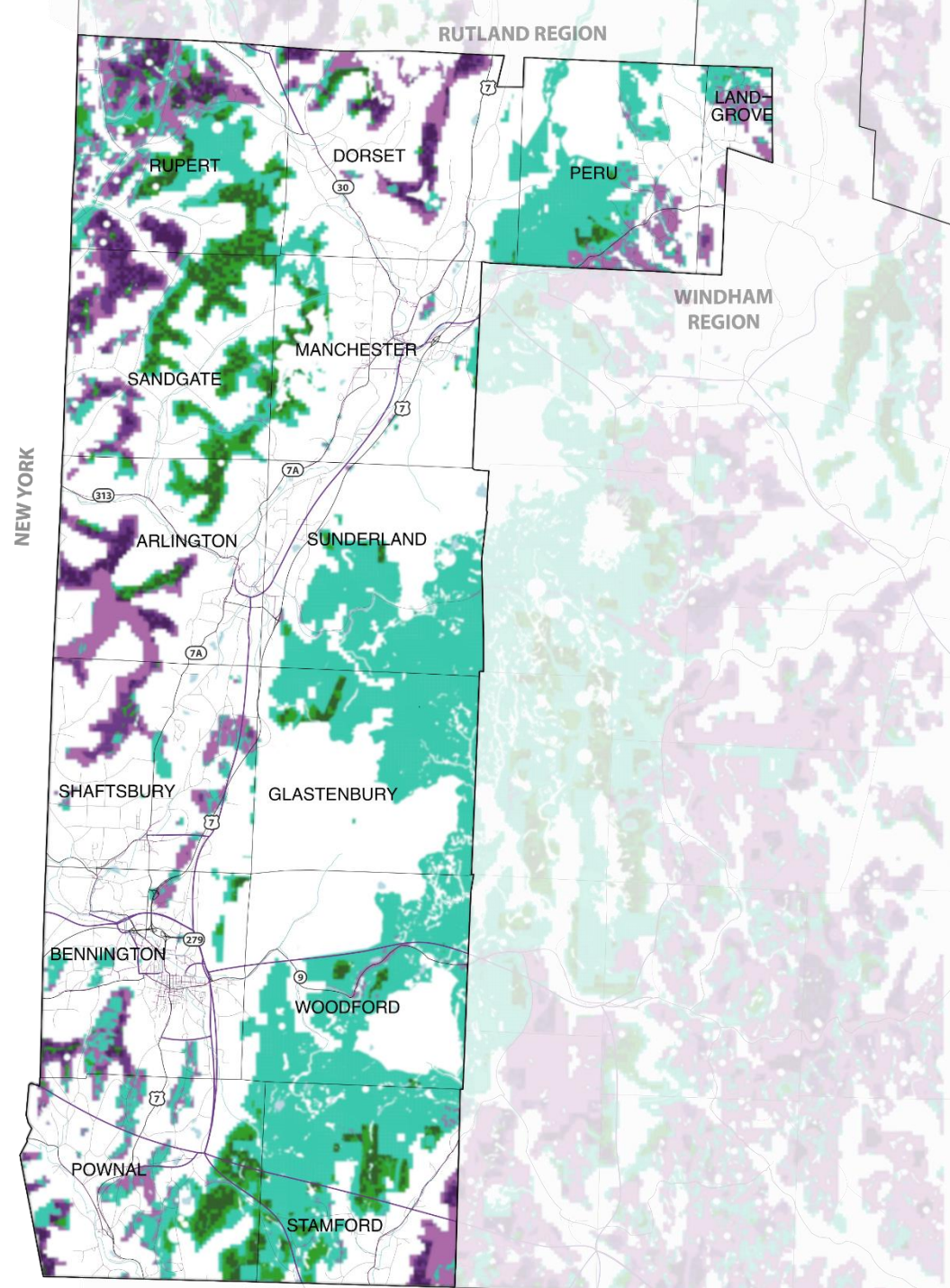


Wind Energy

1 PRIME WIND

2 BASE WIND

Darker areas = higher potential



Wind Energy

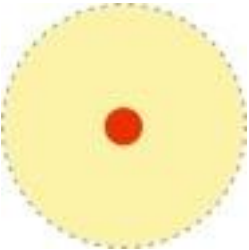
1

PRIME WIND

2

BASE WIND

Darker areas = higher potential



1KM RESIDENTIAL BUFFER

