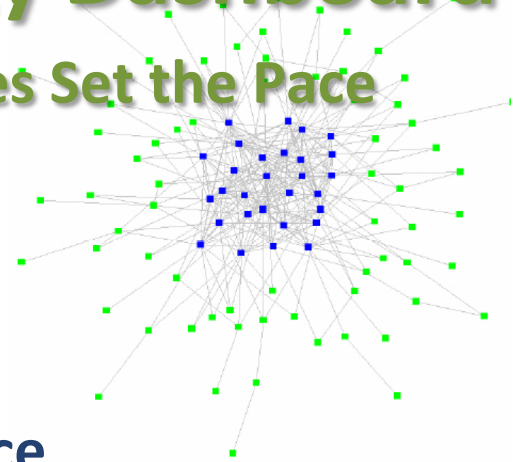




# ***ENERGY ACTION NETWORK***

## **EAN Community Energy Dashboard**

**Helping Vermont Communities Set the Pace**



**VECAN Conference**

**December 6, 2014**

**Andrea Colnes**

**EAN Executive Director**

**90%<sup>B</sup><sub>Y</sub>  
2050**



***Energy Action Network***

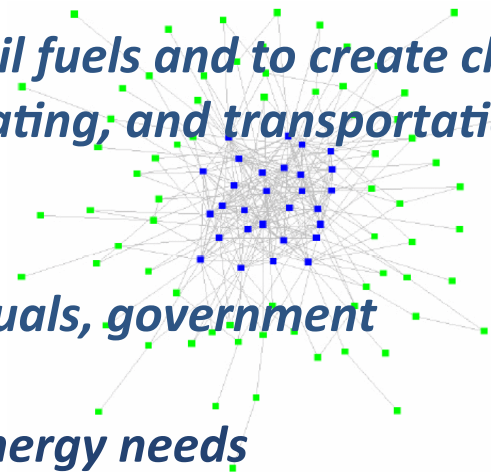


# ***ENERGY ACTION NETWORK***

**Mission:** *To end Vermont's reliance on fossil fuels and to create clean, affordable and secure electric, heating, and transportation systems for the 21st Century.*

**Members:** *Businesses, organizations, individuals, government*

**Goal:** *To meet 90% of Vermont's 2050 energy needs through energy efficiency and renewable energy.*



**90%<sup>B</sup><sub>Y</sub>**  
**2050**



# EAN Participants

- Peter Adamczyk • Charlie Baker • Amanda Beraldi • Janet Besser •
- Ludy Biddle • Kathryn Blume • Michele Boomhower • Jeff Bower • Jo Bradley • Aaron Brown • Tom Buckley •
- Laurie Burnham • Sam Buckley • Megan Camp • Chris Company • Erin Carroll • Marta Ceroni • Andrea Cohen • Andrea Colnes •
- Steve Costello •
- Paul Costello • Paul Craven •
- Catherine Davis • Alex DePillis •
- Catherine Dimitruck •
- Robert Dostis •
- Julia Dunderdorf •
- Peg Elmer • Jamie Ervin •
- Richard Faesy •
- Laurie Fielder •
- Sara Gilbert •
- Peter Gregory •
- David Hill • John Hollar •
- Asa Hopkins • John Irving •
- Ellen Kahler •
- Sandy Levine •
- Anne Margolis •
- Linda McGinnis • Michael Miller •
- Melanie Needle • Scudder Parker •
- Greg Rieder • Cara Robechek • Dave Roberts • Andrew Savage • Jan Schultz • Justine Sears • Tim Shea • Adam Sherman • Amy Shollenberger •
- Luke Shullenberger • Sarah Simonds • Darren Springer • Martha Staskus • James Sullivan • Mary Sullivan • Sam Swanson •
- Gaye Symington • George Twigg • Marianne Tyrrell • Bob Walker • Ben Walsh • Anne Watson •
- Mary Westervelt • Bonnie Wonniger • Eric Zencey •
- Robert Barton •
- Joseph Cincotta •
- Matt Cota •
- Janet Doyle •
- Karen Glitman •
- Karen Horn •
- Bill McKibben •
- Lawrence Mott •
- Kenneth Perine •
- William Sayre •
- Rich Snyder •
- Winn Smith •
- Mary Margaret Sloan •
- Arthur & Anne Berndt •
- Jennifer Berman • Peter Bourne •
- Melody Burkins • Margaret Cheney • Paul Comey •
- Michael Dworkin • Scott Johnstone • Ronald Miller •
- James Moore • Timothy Palmer • William Patten •
- Susan Allen Picone • Ernie Pomerleau • Mary Powell •
- William Raap • Chris Recchia • Chuck Ross •
- Rich Sedano • Jeffrey Wolfe •
- Hal Cohen •
- Rich Cowart •
- Tom Ezslin •
- Blair Hamilton •
- Julie Lineberger •
- Ralph Meima •
- Alan Nogee •
- Jim Sabataseo •
- Liz Schlagel •
- Shap Smith •
- Bill Stenger •
- Karen Yacos •
- Michael Pieciak • John Quinney • Patty Richards •
- David Bradbury •
- Paul Burns •
- Gwen Hallsmith •
- Johanna Miller •
- Brian Otley •
- Andy Perchlik •
- Leigh Seddon •
- Gabrielle Stebbins •
- Richard Weston •
- Richard Donnelly •
- William Driscoll •
- Rebecca Ellis •
- Jon Erickson •
- Chad Farrell •
- Abby Friedman •
- Steve Greenfield •
- Robert Griffin •
- Alison Hollingsworth •
- Ken Jones • Dan Jones •
- Chris Kramer •
- Adam Lougee •
- Deb Markowitz • Wendy McArdle •
- Bill Miller • Derek Moretz • Pat Moulton •
- Eizabeth Courtney •
- Cairn Cross • Chris D'Ella •
- Edward Delhagen •

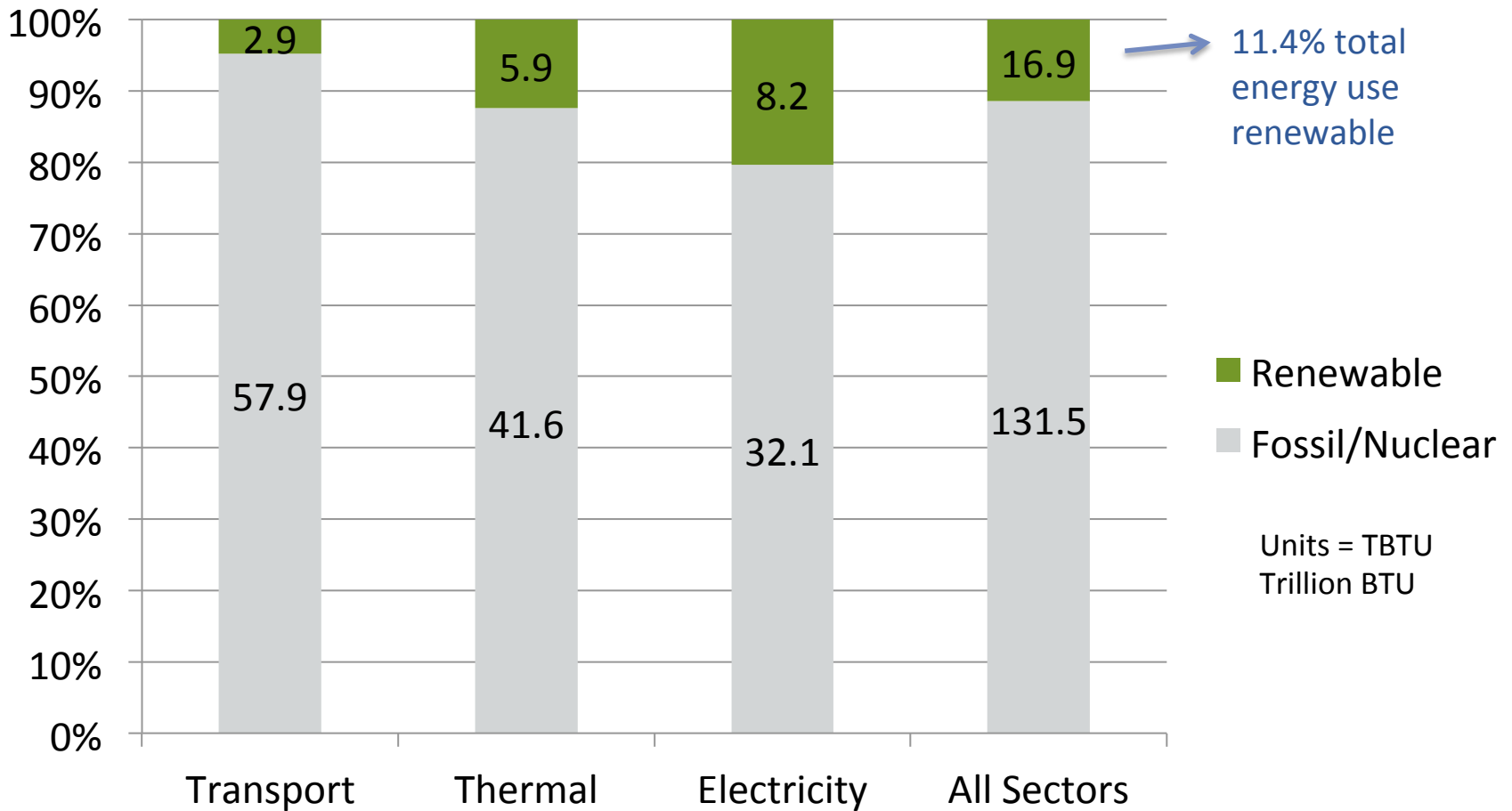


# EAN Energy Pathways Report

- Analysis of policy & technology pathways to achieve state's CEP goal of 90% by 2050
- Ranked pathways by impact
- Suggested decade milestones to reach CEP goal
  - 20% by 2020
  - 40% by 2030
  - 70% by 2040
  - 90% by 2050

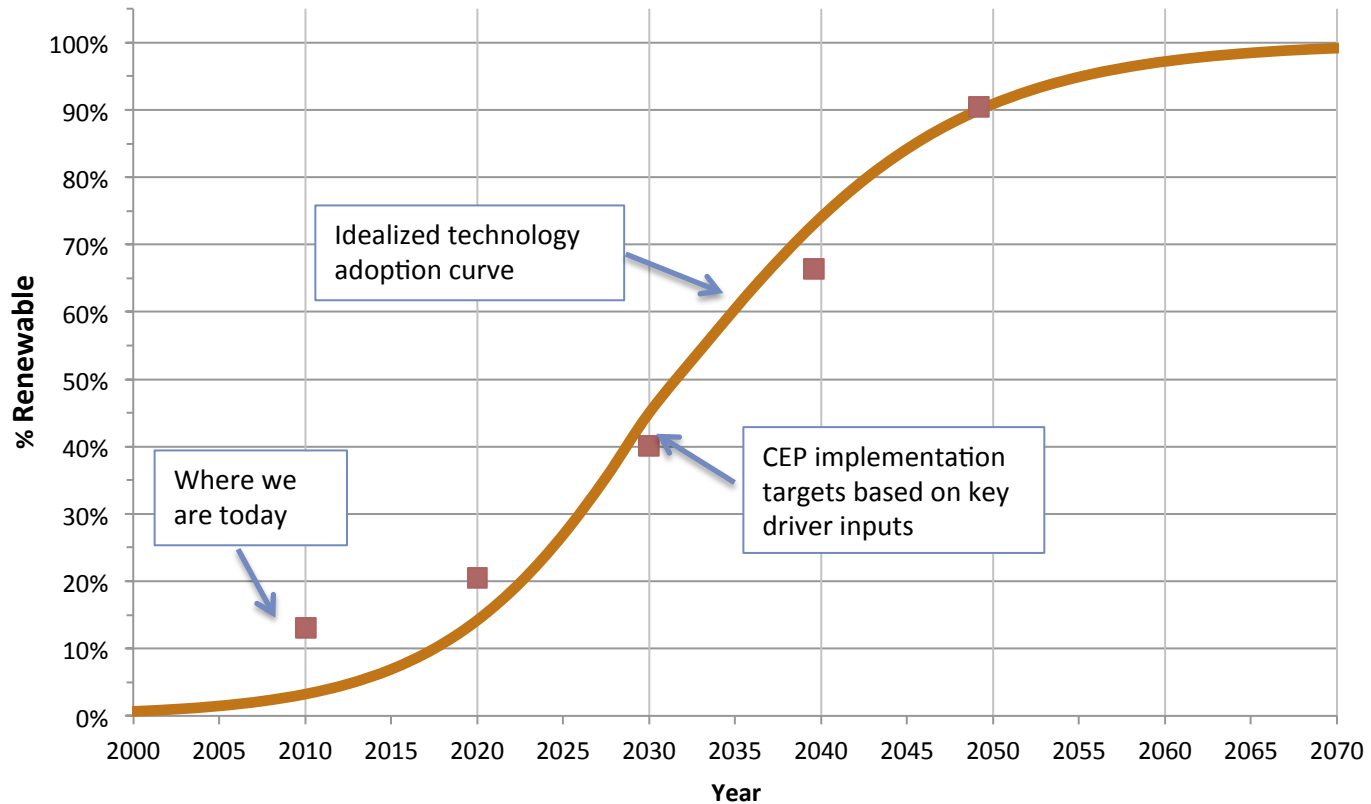


# Strategic Context: Our Current Energy Mix



# Transformation S-Curve

## 90 by 2050: Tech Adoption Curve & Milestones



# Getting to 20% by 2020

In the next seven years, we need:

- Efficiency – Reduce building heat losses by 5%
  - Requires retrofitting 50,000 buildings with 30% savings
- Electric Vehicles – 10% of light vehicle fleet
  - Requires adding 57,000 EVs and PHEVs
- Biomass – additional 5% of building heat loads
  - Requires 15,000 new pellet stoves or boilers
- Biofuels – 5% of liquid fuel for light vehicle fleet
  - Requires a capacity of 15 M gallons biofuels annually



# Getting to 20% by 2020

In the next seven years, we need:

- Biomass CHP
  - Build 80 MW of high-efficiency combined heat and power plants, providing 60 MW thermal and 20 MW electric
- Hydro Electric
  - Build or Refurbish 6 MW small-scale hydro capacity
- Solar Energy
  - Build 150 MW new PV capacity (70 “Solar Farms”)
  - Provide 2% building heat & hot water through solar thermal systems (3,000 SHW systems)
- Wind Power
  - Build 50 MW new in-state capacity
  - Contract for 100 MW regional wind farm capacity





# Why a Community Energy Dashboard?

**Inform**



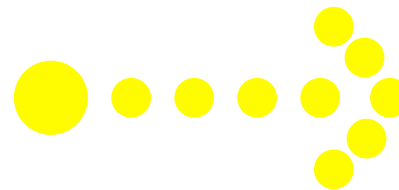
**Educate**



**Engage**



**TAKE  
ACTION**



**Show  
Impact**

- Impact trumps accuracy
- Success drives engagement
- Education is key



# Community-Scale Action

**Tracks community progress toward decade milestones for thermal, electric and transportation energy use**

- 2010 Energy Baseline
- 20% by 2020 Milestones
- 90% by 2050 Milestones and Snapshots
- Next Generation of the Vermont Energy Atlas (VSJF)

*A collaborative project involving EAN, VSJF, VEIC, many EAN members ... and funded by VLITE*



# Dashboard Calculations

- Town “types” were developed to allocate energy use:
  - Large City
  - Small City
  - Town
  - Resort Town
  - Agricultural Community
- Towns types based on population density
- Towns can be grouped by county or region
- Towns and regions add up to state-wide metrics



# Dashboard Data

Town	Type of Community	County	RPC	Total, Electrical, MMBTU	Total, Electric, Renewable, MMBTU	Total, Electric, Non-Renewable, MM BTU	Total, Thermal, MMBTU	Total, Thermal Renewable, MMBTU	Total, Thermal non-renewable, MMBTU	Total, Transportation on total, MMBTU	Total, Transportation, renewable, MMBTU	Total, Transportation non-renewable, MMBTU	Total Energy, MMBTU	Total Energy, Renewable, MMBTU	Total Energy, Non-Renewable, MMBTU
ADDISON	Agricultural Community	Addison	Addison County	23,641	7,428	16,213	110747	18280	92467	119247	13	119234	253,635	25,721	227,914
ALBANY	Agricultural Community	Orleans	Northeastern Vermont Development Association	11,533	3,741	7,792	98556	17098	81458	66728	3	66725	176,817	20,842	155,975
ALBURG	Town	Grand Isle	Northwest	40,556	12,926	27,630	130413	21530	108883	124004	16	123988	294,973	34,472	260,501
ANDOVER	Agricultural Community	Windsor	Southern Windsor County	5,721	1,885	3,836	55040	9653	45387	38347	1	38346	99,108	11,539	87,569
ARLINGTON	Town	Bennington	Bennington County	91,504	28,202	63,302	208153	30397	177756	196310	64	196246	495,967	58,663	437,304
ATHENS	Agricultural Community	Windham	Windham	1,999	652	1,347	19444	3389	16055	26389	1	26388	47,832	4,042	43,790
AVERILL	Agricultural Community	Essex	Northeastern Vermont Development Association	359	116	243	9869	1724	8145	721	0	721	10,949	1,840	9,109
BAKERSFIELD	Agricultural Community	Franklin	Northwest	12,238	3,966	8,272	80945	13985	66960	95710	4	95706	188,893	17,955	170,938
BALTIMORE	Town	Windsor	Southern Windsor County	785	258	527	2809	492	2317	14144	0	14144	17,738	750	16,988
BARNARD	Agricultural Community	Windsor	Two Rivers-Ottawauechee	18,955	6,102	12,853	131607	22628	108979	78488	7	78481	229,500	28,737	200,763
BARNET	Agricultural Community	Caledonia	Northeastern Vermont Development Association	24,995	8,041	16,954	179315	30835	148480	136769	9	136760	341,079	38,885	302,194
BARRE	Small City	Washington	Central Vermont	383,211	119,605	263,606	1076281	195480	880801	1130687	326	1130361	2,590,179	315,411	2,274,768
BARTON	Town	Orleans	Northeastern Vermont Development Association	35,165	11,153	24,012	124249	20464	103785	170408	18	170390	329,822	31,635	298,187
BELVIDERE	Agricultural Community	Lamoille	Lamoille County	3,731	1,223	2,508	36365	6359	30006	22844	1	22843	62,940	7,583	55,357
BENNINGTON	Small City	Bennington	Bennington County	496,885	151,760	345,125	1294825	202095	1092730	1315369	564	1314805	3,107,079	354,419	2,752,660
BENSON	Agricultural Community	Rutland	Rutland	7,054	2,264	4,790	59262	10206	49056	82048	4	82044	148,364	12,474	135,890
BERKSHIRE	Agricultural Community	Franklin	Northwest	27,421	8,687	18,734	133524	22314	111210	118056	13	118043	279,001	31,014	247,987
BERLIN	Town	Washington	Central Vermont	152,774	45,910	106,864	273385	34014	239371	299341	141	299200	725,500	80,065	645,435
BETHEL	Town	Windsor	Two Rivers-Ottawauechee	81,288	24,724	56,564	168982	23168	145814	175361	67	175294	425,631	47,959	377,672
BLOOMFIELD	Agricultural Community	Essex	Northeastern Vermont Development Association	3,341	1,074	2,267	28878	4982	23896	20913	1	20912	53,132	6,057	47,075
BOLTON	Resort Town	Chittenden	Chittenden County	22,966	7,252	15,714	44011	7686	36325	76336	18	76318	143,313	14,956	128,357
BRADFORD	Town	Orange	Two Rivers-Ottawauechee	57,439	17,881	39,558	147553	22614	124939	180893	36	180857	385,885	40,531	345,354
BRAINTREE	Agricultural Community	Orange	Two Rivers-Ottawauechee	5,854	1,878	3,976	42711	7332	35379	93613	4	93609	142,178	9,214	132,964
BRANDON	Town	Rutland	Rutland	90,175	28,474	61,701	245645	39229	206416	260344	44	260300	596,164	67,747	528,417
BRATTLEBORO	Small City	Windham	Windham	563,501	170,890	392,611	1464979	218254	1246725	1260623	687	1259936	3,289,103	389,831	2,899,272
BRIDGEWATER	Agricultural Community	Windsor	Two Rivers-Ottawauechee	25,751	8,065	17,686	130863	21625	109238	88526	15	88511	245,140	29,705	215,435
BRIDPORT	Agricultural Community	Addison	Addison County	25,297	8,144	17,153	119312	20310	99002	101163	8	101155	245,772	28,462	217,310
BRISTOL	Town	Addison	Addison County	82,411	26,107	56,304	220739	35456	185283	247506	38	247468	550,656	61,601	489,055
BROOKFIELD	Agricultural Community	Orange	Two Rivers-Ottawauechee	16,788	5,474	11,314	130010	22618	107392	96288	4	96284	243,086	28,096	214,990
BROOKLINE	Agricultural Community	Windham	Windham	3,080	1,007	2,073	31026	5419	25607	36223	1	36222	70,329	6,427	63,902
BROWNINGTON	Agricultural Community	Orleans	Northeastern Vermont Development Association	9,456	3,054	6,402	73096	12627	60469	70111	4	70107	152,663	15,685	136,978
BRUNSWICK	Agricultural Community	Essex	Northeastern Vermont Development Association	1,973	617	1,356	11394	1896	9498	9242	1	9241	22,609	2,514	20,095

[Full dashboard data file](#)



# Community Dashboard Concept

Community Energy Dashboard Header

Your Pathway to Clean Energy

[Social Media](#)   [LOG OUT](#)

About the Dashboard   My Community   90 x '50   Energy Atlas   Resources

## Town Name

Several kinds of dashboards are possible here:

1. 20 by 2020
2. Uploaded image from end user (e.g., RPC analysis)
4. Electricity consumption and savings (2004 through current year)
5. Timeline that includes when Atlas sites are added

Expands and go to landing page

20 by 2020   2   3   4   5

**CONTENT SPACE CHANGES WITH TAB SELECTED.**

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## Stats

Synched with database

	#	Rank	IW	Rank	
	32	89	57	62	View on Map
	1	200	10	54	View on Map
	1	222	25	222	View on Map
<b>Total</b>	34	52	92	201	View on Map

## Actions

[Save Electricity](#)

[Save Heat](#)

[Save Gas](#)

## Do One Thing

My pledge

Erica just installed 4 kW of solar PV!  
[Click](#) to learn more.

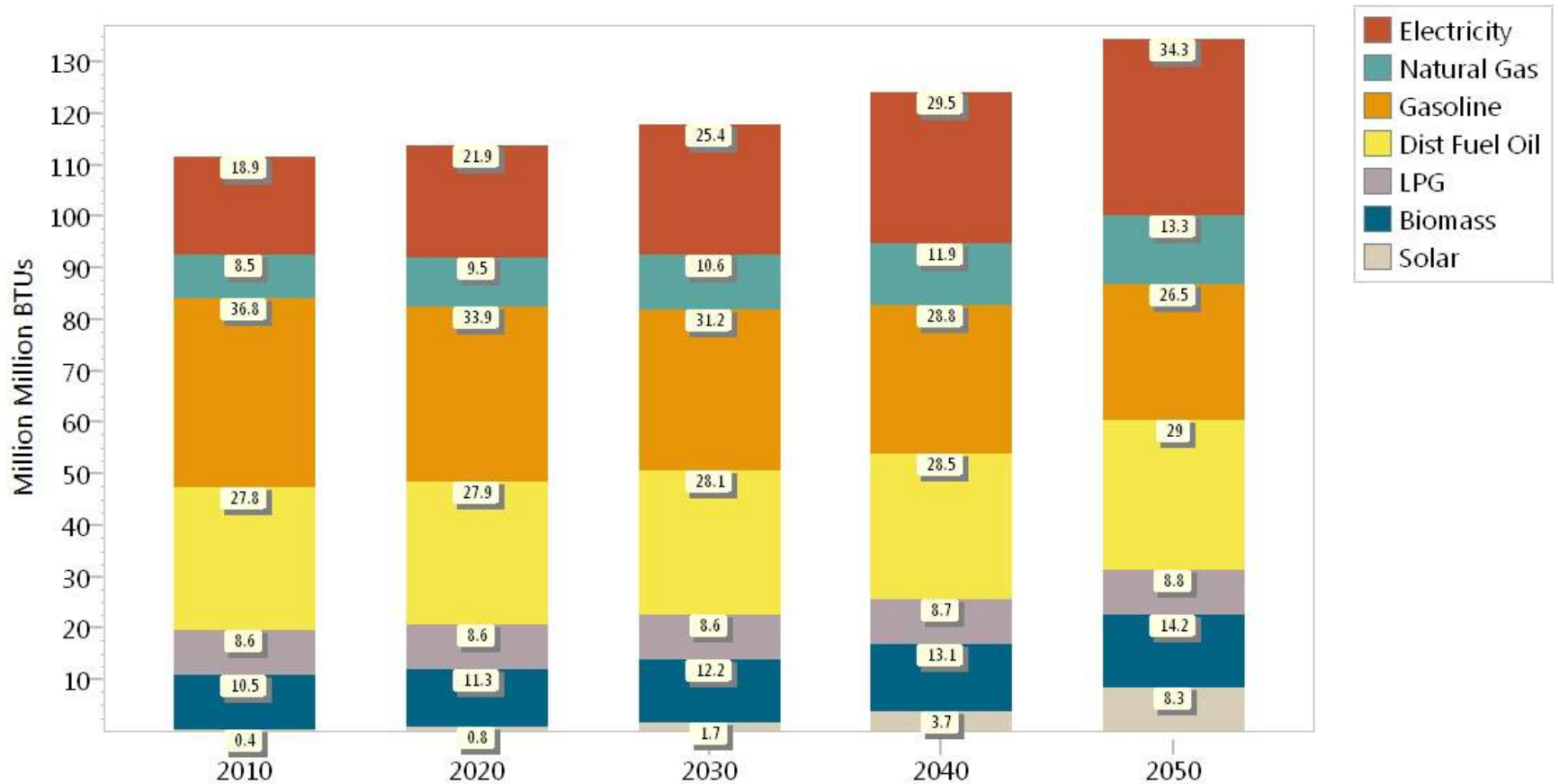
Anthony just bought an Energy Star washing machine!  
[Click](#) to learn more.

Courtesy of  
Scott Sawyer,  
VSJF



# Vermont Energy End Use Demand by Fuel Type

Scenario: Reference Case, EIA "Business As Usual"

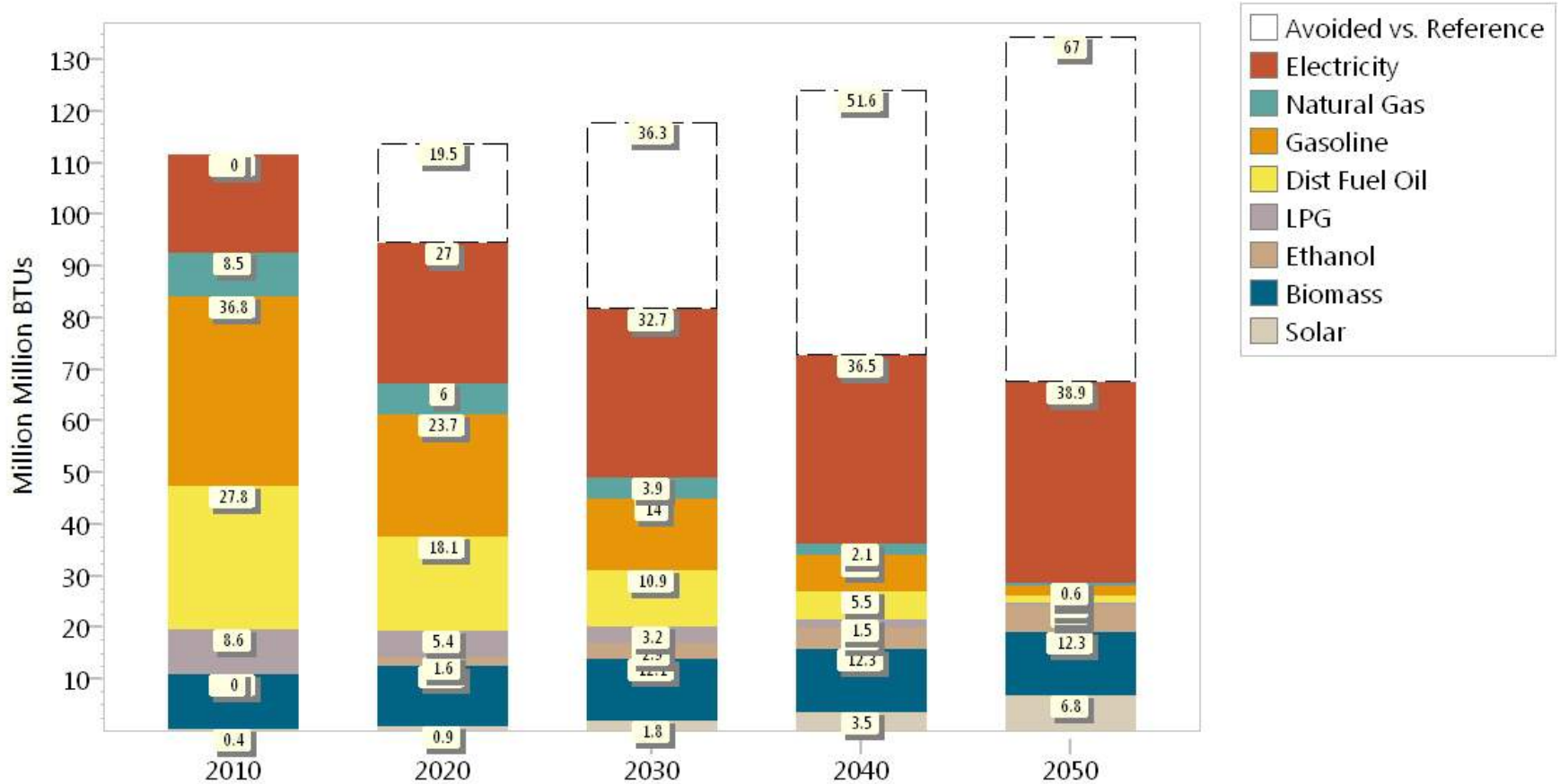


LEAP modeling courtesy of David Hill, VEIC



# Vermont End Use Energy Demand by Fuel Type

Scenario: 90% by 2050 Pathway Example



LEAP modeling courtesy of David Hill, VEIC





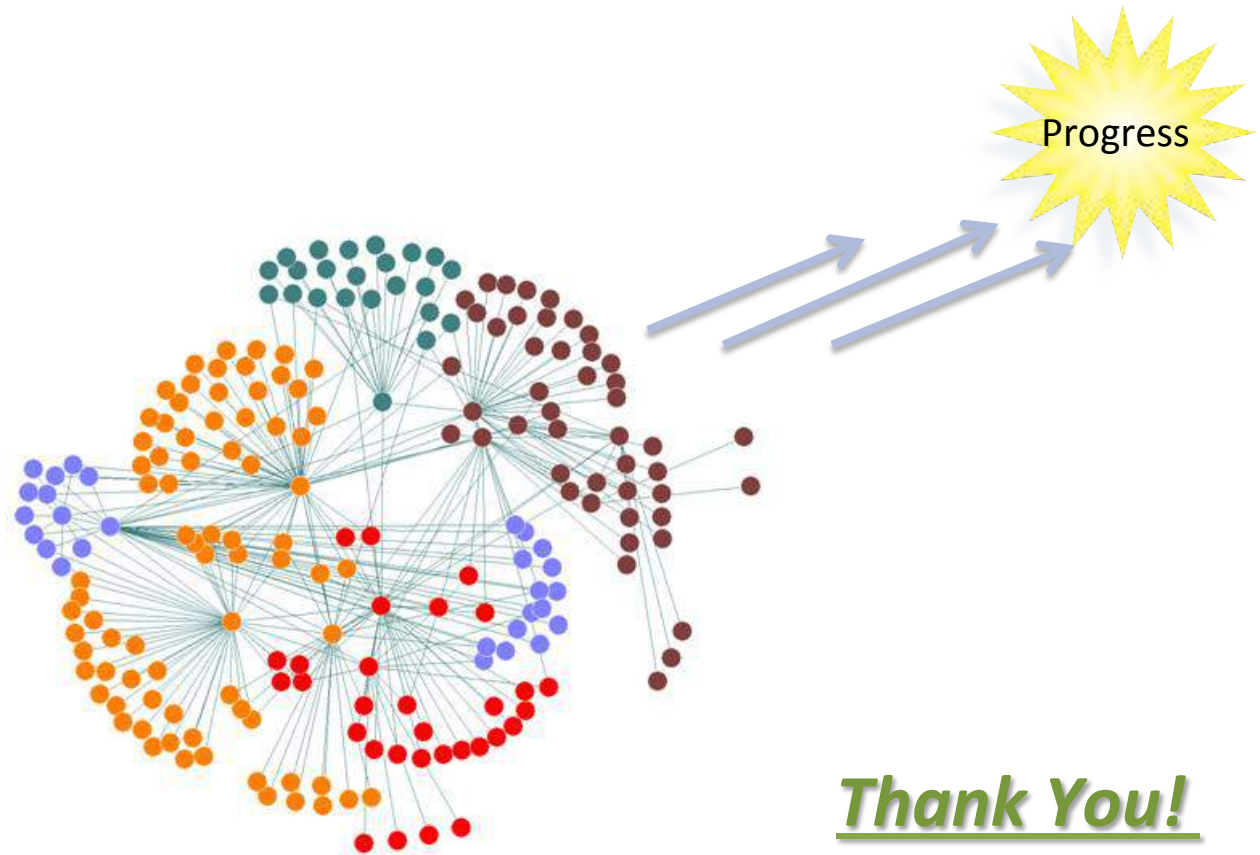
# Next Steps

- Website under construction by Vermont Design Works
- Dashboard will be integrated with next generation of VSJF's "Vermont Energy Atlas"
- Launch anticipated in March 2014
- Pilot towns include: Montpelier, Waterbury, Hyde Park, possibly Middlebury, South Burlington, .... *and yours?!*





# Helping each community add up to... Collective Impact



**Questions:**

**Andrea Colnes**  
**Energy Action Network**  
**[acolnes@eanvt.org](mailto:acolnes@eanvt.org)**

**Thank You!**



**Energy Action Network**

*Collaborative Network Initiative, Garfield Foundation*