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Benchmarking 2014-2015 Demand Side Management Results for Vermont

PREPARED FOR THE VERMONT PUBLIC SERVICE DEPARTMENT

Prepared by Energy Futures Group and Optimal Energy

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Section 1: Methodology and Scope

Methodology and Scope

Introduction

This report benchmarks the three current Vermont energy efficiency utilities (EEUs) against other efficiency program administrators (PAs) in the Northeast and Mid-Atlantic states for the years 2014 and 2015:

- Efficiency Vermont (EVT) and Burlington Electric Department (BED) were benchmarked against 17 PAs.
- Vermont Gas Services (VGS) was benchmarked against 16 PAs.
  - Note that in 2014 and 2015 VGS was not an EEU and its efficiency program reporting was not subject to the same level of regulatory review as it currently is. For example, savings claims were not evaluated by a third party.
  - VGS was appointed an EEU in 2016 and after a two-year transition period became full-fledged EEU

Methodology and Scope (Cont.)

Benchmarking Comparison Groups

Benchmarked PAs were selected for the comparison group based on their:

- Level of efficiency activity
- Geographic proximity to Vermont
- Size
- Organizational structure

The selected PAs represent a diverse group of efficiency program providers based on the criteria above.

Methodology and Scope (Cont.)

Benchmarking Comparison Groups

Of the initially selected comparison group, not all of the PAs were ultimately included in the respective electric and/or gas comparison groups for the following reasons:

- Did not report efficiency program data to the Northeast Energy Efficiency Partnership's (NEEP) Regional Energy Efficiency Database (REED). These included the NJ Clean Energy Program and the CT Municipal Electric Cooperative.
- Were determined to not be a valid peer, e.g., NYSERDA's transition away from resource acquisition efforts to those primarily focused on market transformation.
- Were a single fuel utility provider and did not support efficiency efforts of other fuels, e.g., inclusion of Public Service of New Hampshire's support for its gas-only efficiency efforts.

Methodology and Scope (cont.)

Program Administrators in Benchmark Comparison Groups

State	Program Administrator	Name used in Figures	IOU	State/Local Agency	Coop	Electric	Gas
CT	Eversource	Eversource CT	x			x	
	Eversource	CT Eversource Gas	x				x
	Southern Connecticut Gas	SCG	x				x
	Connecticut Natural Gas	CNG	x				x
DC	District of Columbia Sustainable Efficiency Utility	DCSEU		x		x	
DE	Department of Natural Resources and Environmental Control	DNREC		x		x	
MA	Eversource	Eversource - MA	x			x	x
	National Grid	NGrid-MA	x			x	x
	NSTAR Gas (Eversource)	NSTAR	x				x
	WMECo (Eversource)	WMECO	x			x	
	Columbia Gas	Columbia	x				x
	Berkshire Gas	Berkshire	x				x
	Cape Light Compact	CLC		x		x	
	Unitil-MA	Unitil MA	x				x
	Fithcburg Gas and Electric (Unitil MA)	FG&E	x			x	
MD	Baltimore Gas and Electric	BG&E	x			x	x
	Southern Maryland Electric Cooperative	SMECO			x	x	
ME	Efficiency Maine	eMaine		x		x	x
NH	Public Service of New Hampshire	PSNH	x			x	
	Liberty Gas	Unitil	x				x
	Granite State Electric Company	GSECO				x	
	Unitil - NH	Unitil - NH	x			x	x
NY	Orange and Rockland	O&R	x			x	x
	Rochester Gas & Electric	RG&E	x			x	x
RI	National Grid	NGrid-RI	x			x	x

Methodology and Scope (Cont.)

Prior work completed for this benchmarking study and included in this report includes:

- Administrative Cost and Efficiency Report (Appendix A)
- Compensation Memo (Appendix B)

Methodology and Scope (Cont.)

Data Sources

Program administrator data from 2014 and 2015 were collected from publicly available sources supplemented with follow-up emails and phone calls.

- PA savings and budget data were obtained from the Regional Energy Efficiency Database (REED) maintained by the Northeast Energy Efficiency Partnerships (NEEP). https://reed.neep.org/
  - The full set of data points used to develop the benchmarking values in the report were not available for all of the PAs reporting to REED, e.g., not all PAs reported lifetime savings
  - In some cases, sector level data was less complete than was portfolio data
  - Net savings at the meter were used unlike in prior Navigant report
    - Better indicator of program performance
- Electric baseline sales and revenue for utilities were collected from FERC Form 861 from www.eia.doe.gov.

Methodology and Scope (Cont.)

Adjustments made to VT EEU Program Cost Data

- Additional VT EEU data was obtained from regulatory filings and verified by discussions with EEU staff
- In 2014-15, budgets for EVT and BED were allocated into two main categories:
  - Resource Acquisition (RA) costs defined as costs for services that directly achieve energy savings
  - Non-Resource Acquisition (NRA) costs defined as services that provide necessary support for the operation of the EEUs, but do not directly achieve energy savings
- EVT and BED only reported RA costs to REED
- EVT and BED's NRA costs were added to the total spending amount they reported to REED
- Some NRA costs were considered administrative and were allocated to the administrative cost category

Methodology and Scope (Cont.)

Derivation of VT EEU Low Income Budgets

- Low Income program spending and some savings data were not available for the VT EEUs from REED.
- These data were obtained directly from the EEUs.

Demand savings

- Unlike the prior Navigant study, demand savings benchmarking was only done at the Portfolio level. No consolidated source for sector level summer peak demand could be identified.

Methodology and Scope (Cont.)

Levelized Cost of Saved Energy

- In addition to providing the annual and lifetime cost of saved energy (savings/spending), the levelized cost of saved energy was also calculated.
- The metric applies a 3% discount rate to the stream of annual savings over the average lifetime of the savings:
  - lifetime savings/annual savings = average lifetime
- This discounting place a lesser value on future savings and effectively yields a net present value (NPV) of the savings stream.
- The spending component for this metric is the same as used in the annual and lifetime cost of saved energy calculation.

Methodology and Scope (Cont.)

Considerations in using PA Benchmarking data

There are a number of factors to consider in using benchmarking data to compare the performance of different PAs. These include, but are not limited to:

- **Program Administrator Size**. Economies of scale may be achieved when delivering efficiency programs. These economies may also be attained, or amplified, through statewide program implementation, including coordinated statewide electric and gas program delivery, as is in place in Massachusetts and Connecticut.
- **Program Maturity**. Well established programs may have lower administrative costs compared to a PA that is still ramping up their efficiency efforts. However, they may also have higher costs of savings as programs mature since inexpensive "low-hanging fruit" savings may represent a smaller proportion of their program activities.
- **Provision of Account Management and Technical Services**. For C&I customers, particularly larger ones, providing focused account management and technical services may allow a PA to attain significant savings from these customers at potentially lower incentive costs.

Methodology and Scope (Cont.)

Considerations in using PA benchmarking data (cont.)

- **Support of delivered fuel efficiency activities**. Many PAs in the Northeast use electric efficiency funds to support delivered fuel efficiency efforts, particularly in their low income and residential sector programs. These activities will raise the electric cost of savings as program budget is expended for activities that do not yield electricity savings.
- **Annual vs. Lifetime savings**. Annual cost of savings metrics can be skewed by measures with short measure lives, most notably by residential behavior efforts. For example, in 2017, residential gas behavior savings constituted 39% of Massachusetts statewide residential sector annual gas savings and 21% of statewide portfolio annual gas savings, but only 3% of statewide residential and 2% of statewide portfolio lifetime savings.
- **Low-income program activity.** The extent of low-income program funding may have an impact on cost of savings. Incentives for low income programs are typically at or near full measure cost. As a result, low income programs have a high cost of saved energy compared to other programs in a PA's portfolio. Higher proportional amounts of low-income program activity will tend to raise the cost of savings at the portfolio level.

Methodology and Scope (Cont.)

Considerations in using PA benchmarking data (cont.)

- **Residential vs. C&I program spending**. Residential programs usually have higher costs of savings given higher per participant transaction costs and lower hours of use compared to commercial programs and measures. PAs providing greater proportions of efficiency services to the residential sector will tend to have higher overall portfolio-level costs of saved energy.
- **Depth of Savings.** While not examined explicitly, deeper savings may require higher incentives (as a percent of incremental cost) to induce greater participation and measure uptake.
- **Presence of residential behavioral programs**. Residential behavioral programs typically have low annual (but high lifetime) costs of savings. For some PAs, as noted in the Massachusetts example above, these programs represent a significant portion of their residential sector annual savings, potentially lowering portfolio-level costs of annual saved energy.

Methodology and Scope (Cont.)

Considerations in using PA benchmarking data (cont.)

- **Differences in how energy savings are determined**. Program administrators in different jurisdictions may claim different savings for the same measure. Some of these differences may reflect actual variations in measure savings due to differences in parameters like hours of use or heating and cooling degree days. However, some of the differences may be driven by the level of evaluation activity and how recently a given measure has been evaluated. In some states this issue is further complicated by regulatory requirements.

One example is in Massachusetts, where net to gross (NTG) ratios are locked in place throughout a given Three-year Plan cycle. For example, in 2015 it was agreed that the NTG ratio for a standard residential LED lamp sold at retail in Massachusetts would be 70% in 2018. Connecticut, which updates its NTG assumptions annually and which completed a residential lighting NTG study in 2017, uses a 44% NTG value for a standard residential LED lamp sold at retail in 2018. Given the large contribution of residential lighting to most PA portfolios throughout the Northeast and Mid-Atlantic regions, such differences in a single variable would have a measurable impact on a cost of saved energy metric.

Methodology and Scope (Cont.)

Administrative Cost and Efficiency and Deeper Dives

In addition to the quantitative benchmarking at the portfolio, C&I and Residential sector levels, additional research was done to examine specific topics in greater depth.

These included the development of an Administrative Cost and Efficiency report component and a set of Deeper Dives.

The Deeper Dives leveraged a variety of data sources, including a set of PA staff interviews to examine:

- Delivered fuel efficiency programs
- Job impacts
- Low-income programs

In addition, a standalone Compensation Benchmarking analysis was performed to assess PA compensation above and beyond the cost of service.

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Section 2:
2014 and 2015 Electric Overall Benchmarking Results

Section 2: 2014 Electric Overall Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Summer Peak Demand Savings as % of Peak Demand	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	4.9%	1.1%	0.8%	$0.11	$0.39	$0.05	$0.04
EVT	6.3%	1.8%	1.3%	$0.15	$0.52	$0.05	$0.04
BED	5.4%	1.6%	1.3%	$0.14	$0.47	$0.07	$0.06

Section 2: 2015 Electric Overall Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Summer Peak Demand Savings as % of Peak Demand	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	4.4%	1.3%	1.1%	$0.12	$0.36	$0.04	$0.03
EVT	6.6%	2.1%	1.6%	$0.14	$0.45	$0.04	$0.04
BED	5.1%	1.8%	1.0%	$0.14	$0.41	$0.04	$0.03

Section 2: 2014 and 2015 Overall Benchmarking Results

Overall Spending as % of Revenue and Energy Savings as % of Sales – Bar Chart

- These bar charts illustrate what each organization is achieving in terms of spending as a percentage of revenue and energy savings as a percentage of sales.

Cost of saved energy ($/kWh or $/therm)– Bar Chart

- For the PAs reviewed, the bar charts illustrate the total cost per annual or lifetime energy (kWh or therm) saved and represents total portfolio or sector costs divided by the corresponding program budgets.

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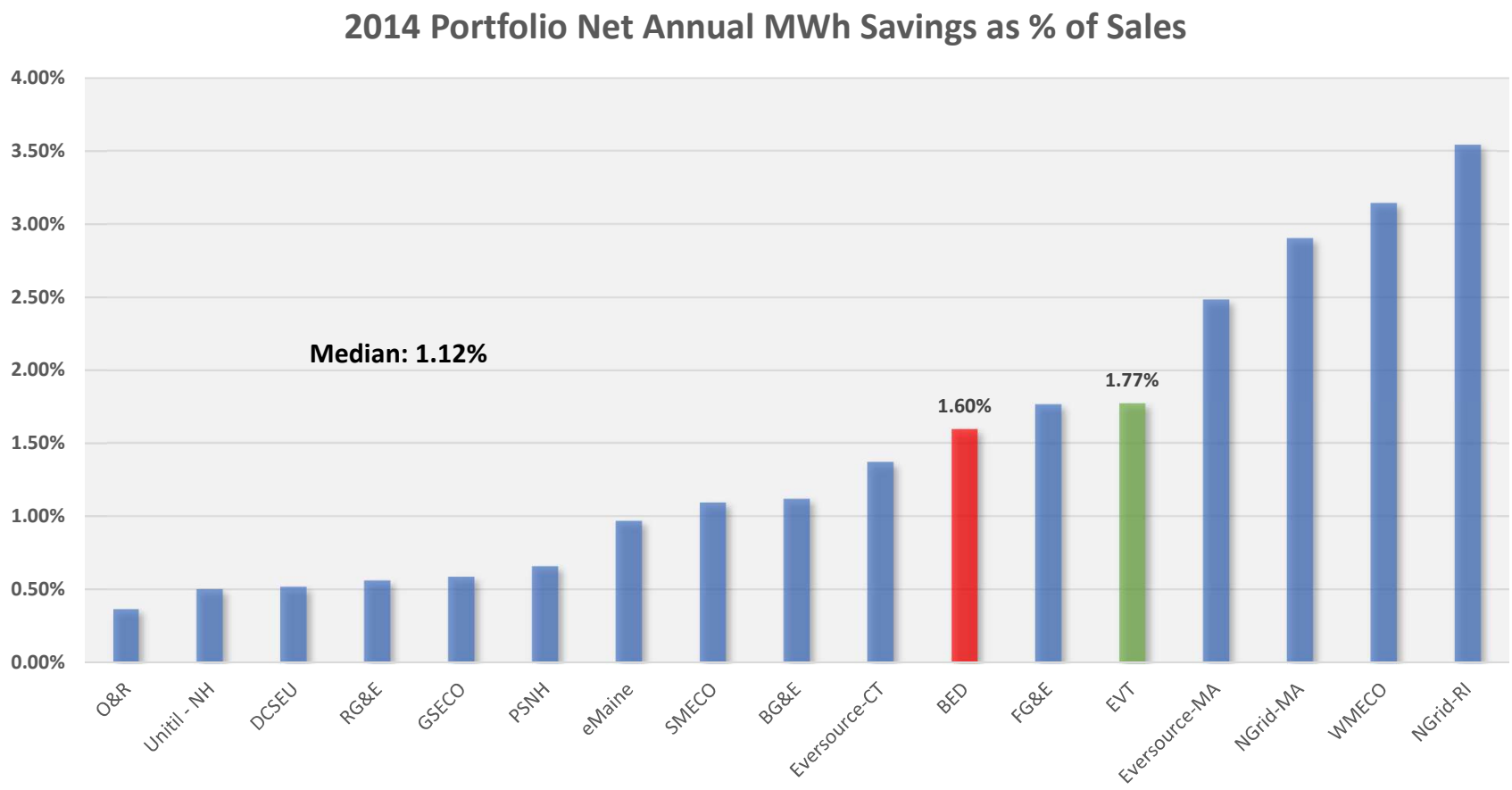
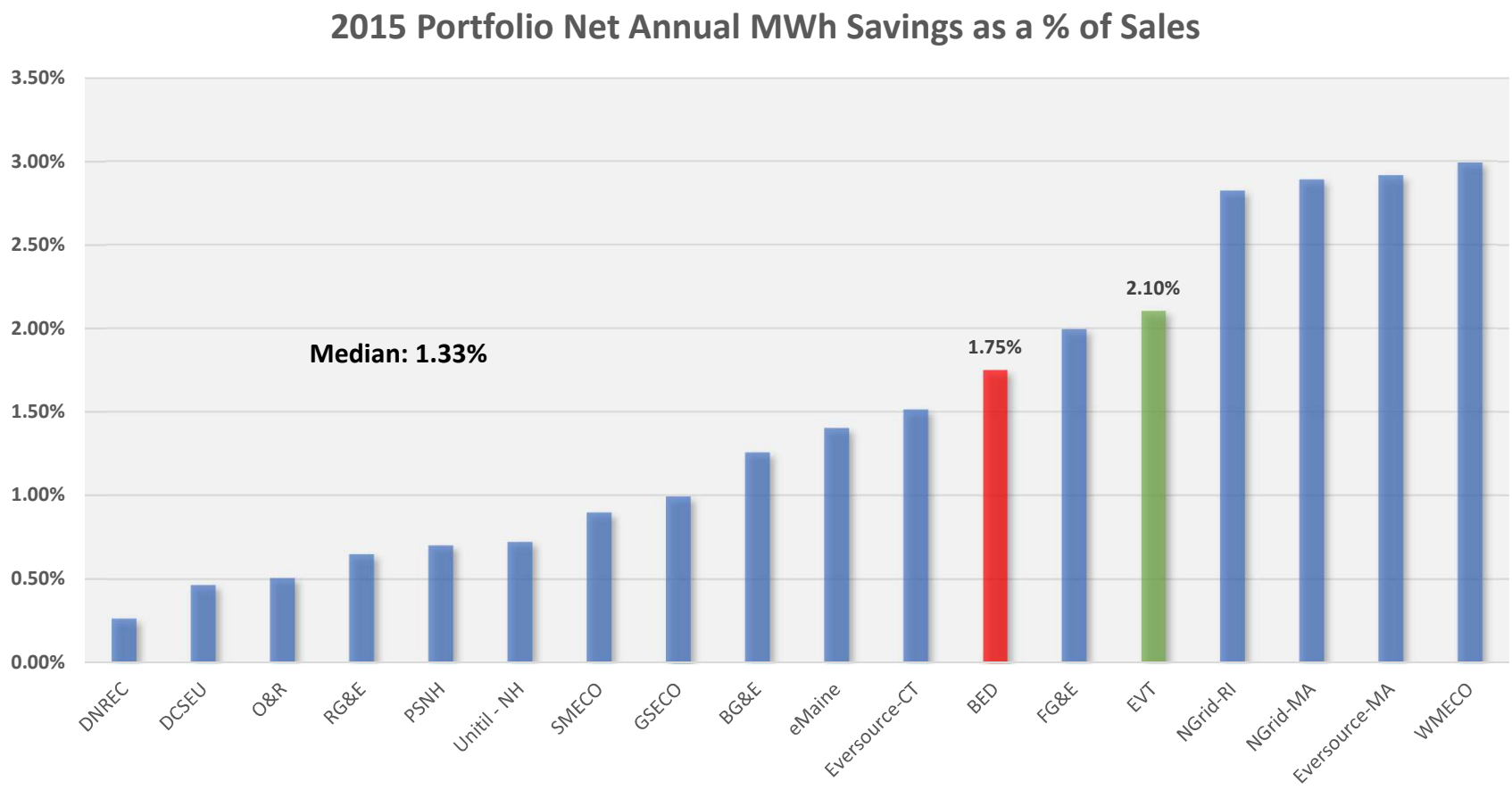
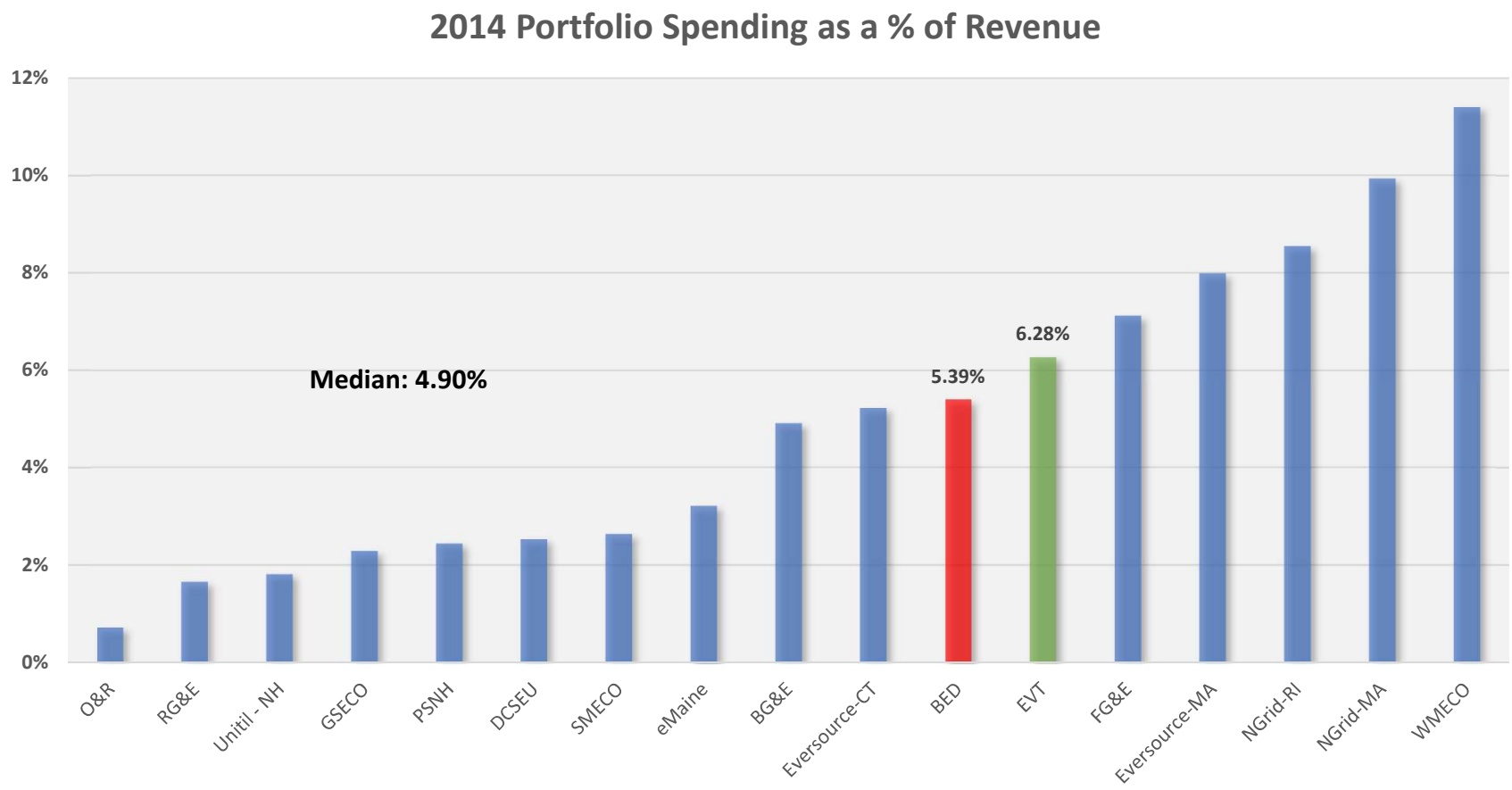
In 2014, BED and EVT both had net annual savings as a % of sales above the median, at 1.60% and 1.77%, respectively, compared to a median of 1.12%.



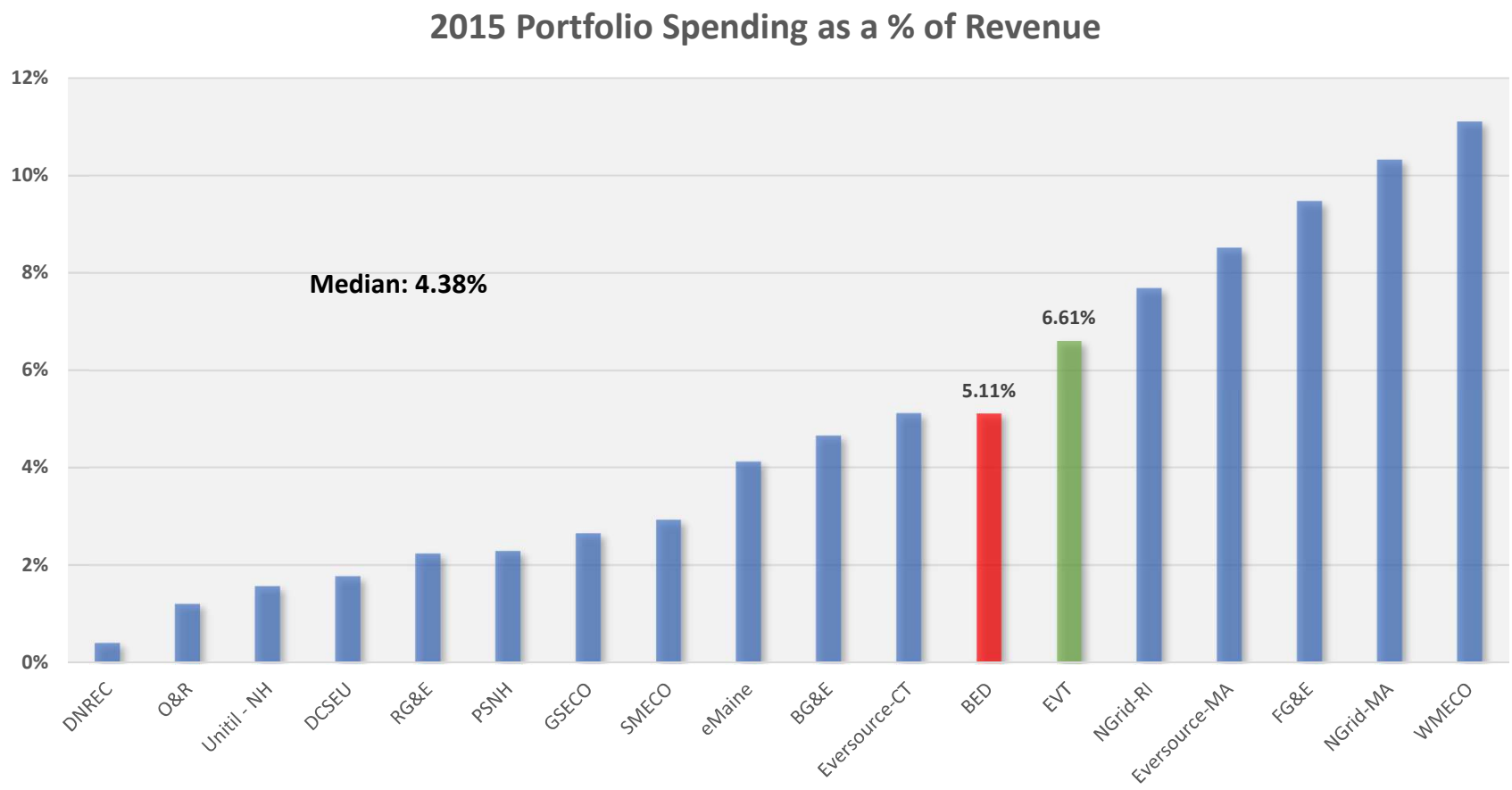
Similarly, in 2015, EVT and BED had overall net annual MWh savings as a % of sales of 2.10% and 1.75%, both above the median at 1.33%.



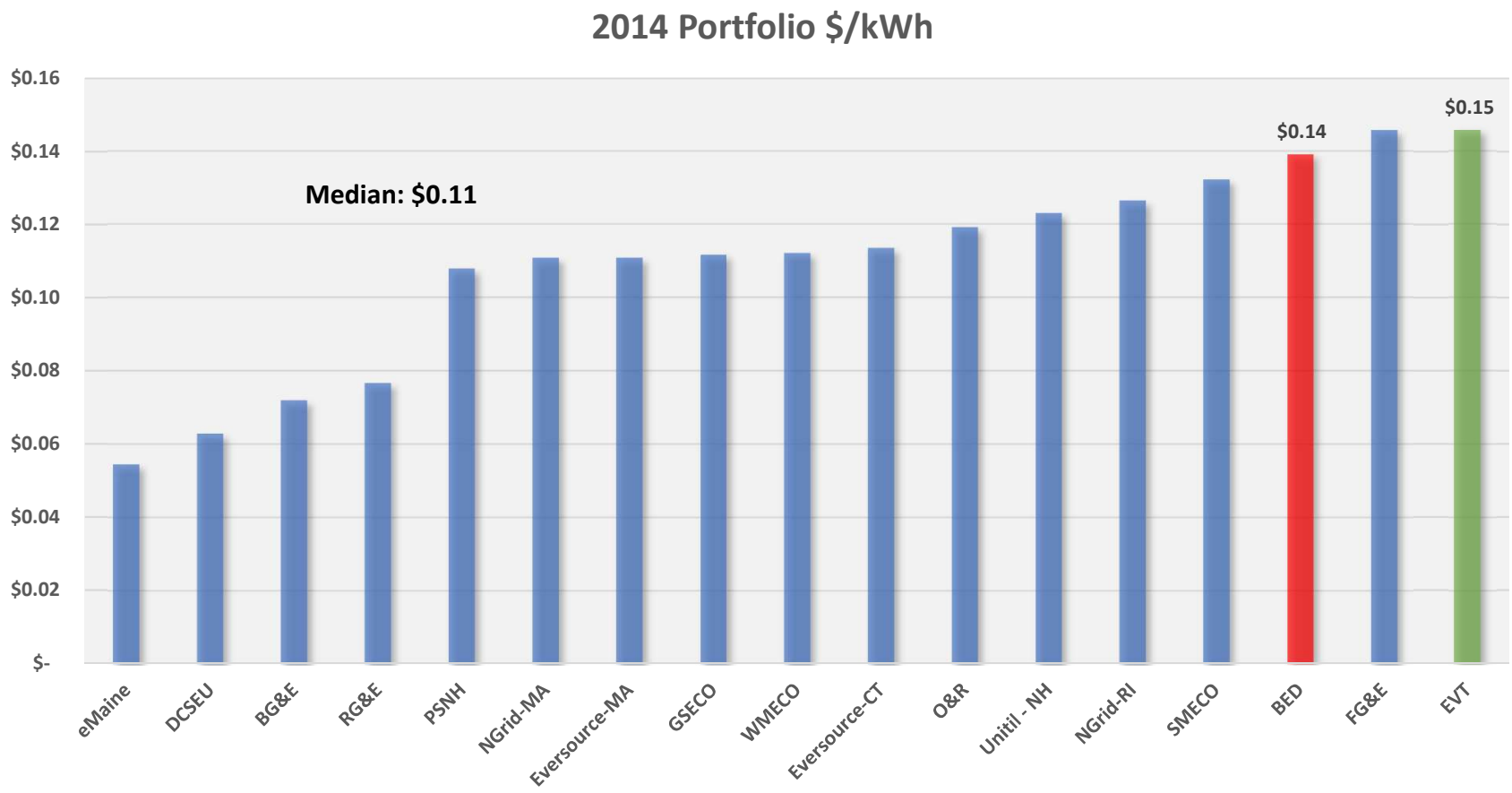
In 2014, EVT's Portfolio spending was 6.28% of total revenue and BED's was 5.39%, both above the median of 4.90%.



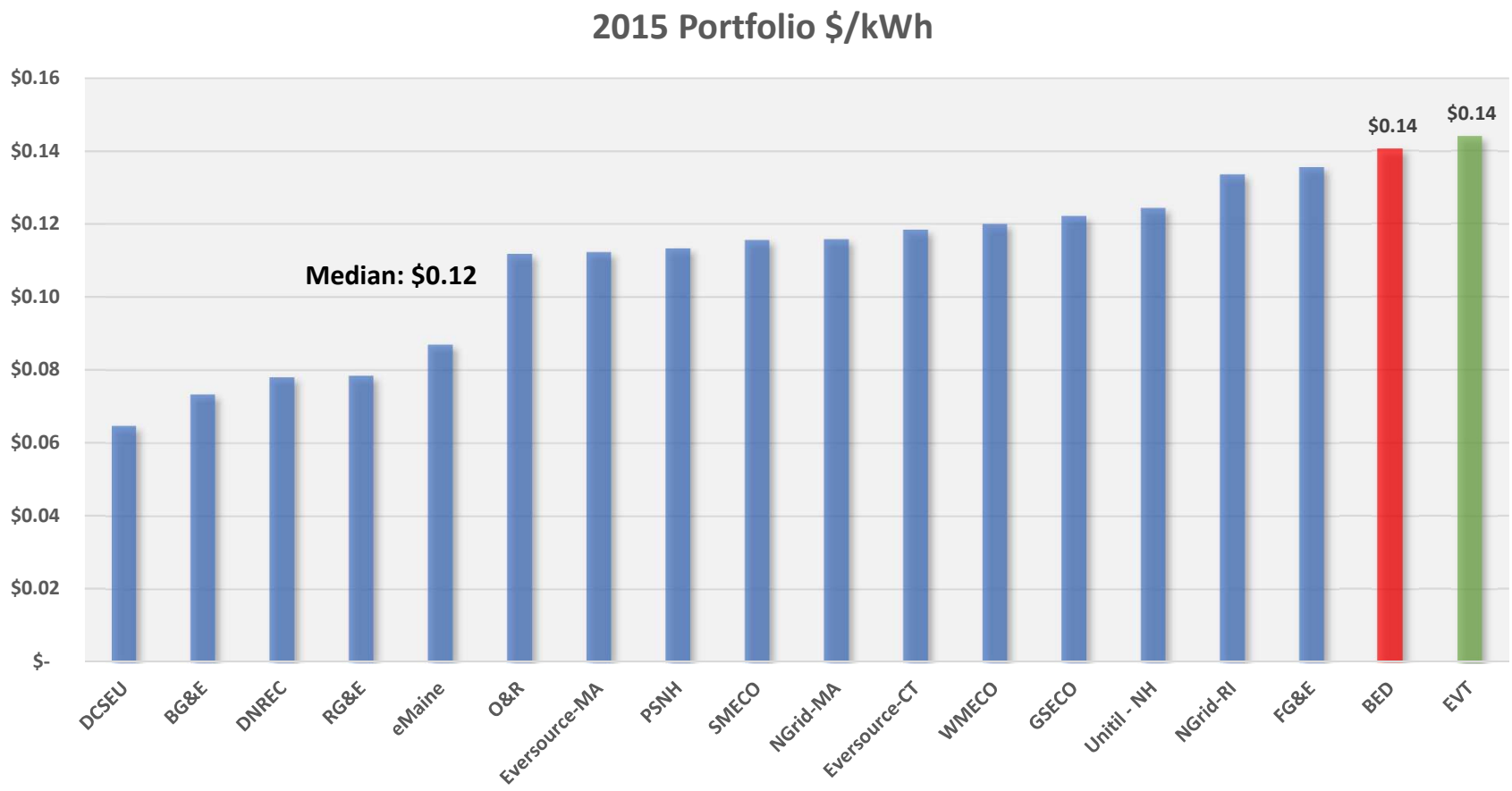
Similarly, in 2015 EVT's Portfolio spending was 6.61% of total revenue and BED's was 5.11%, both again above the median of 4.38%.



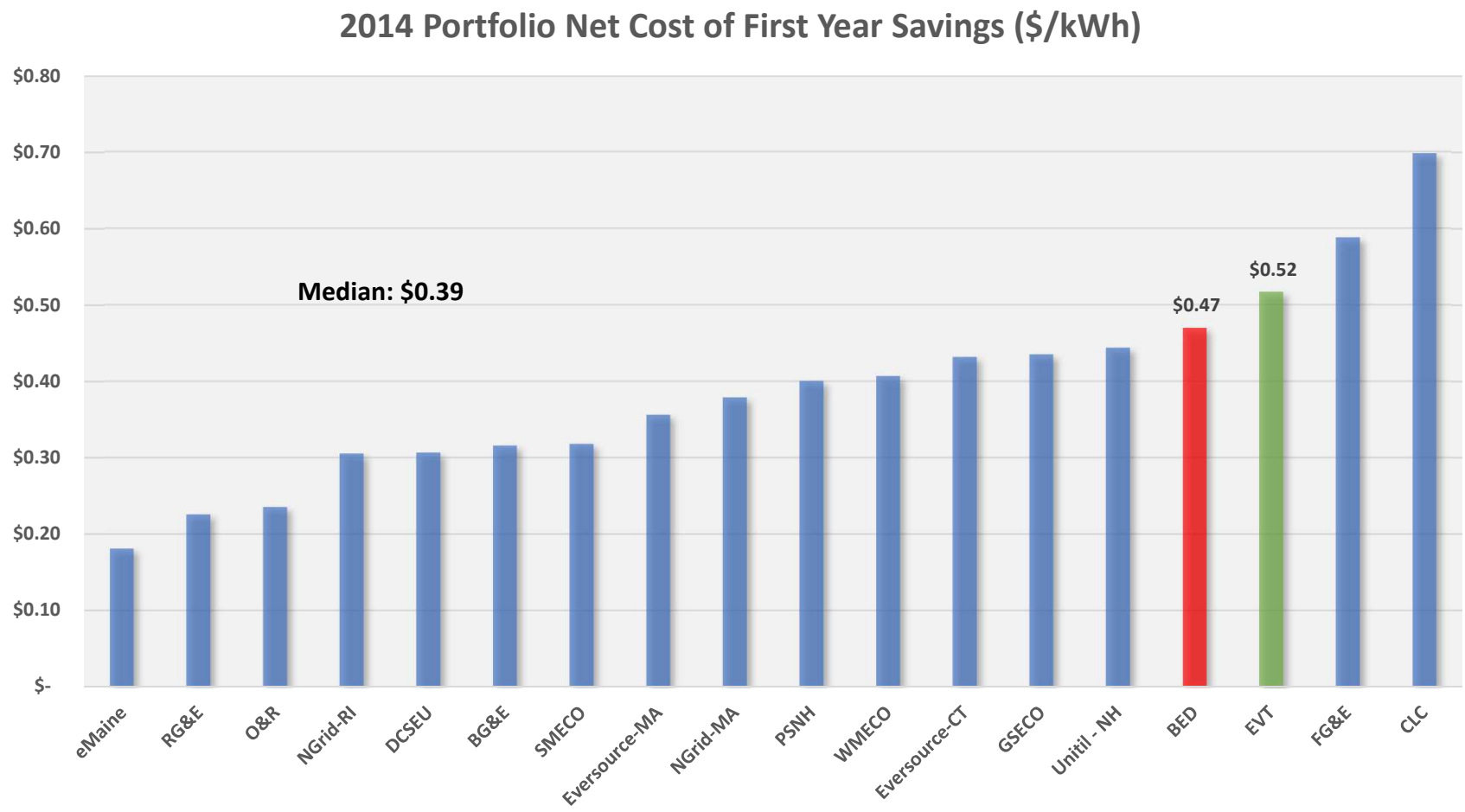
In 2014, EVT and BED had two of the highest Portfolio retail rates at $0.15/kWh and $0.14/kWh, respectively, compared to the median rate of $0.11/kWh.



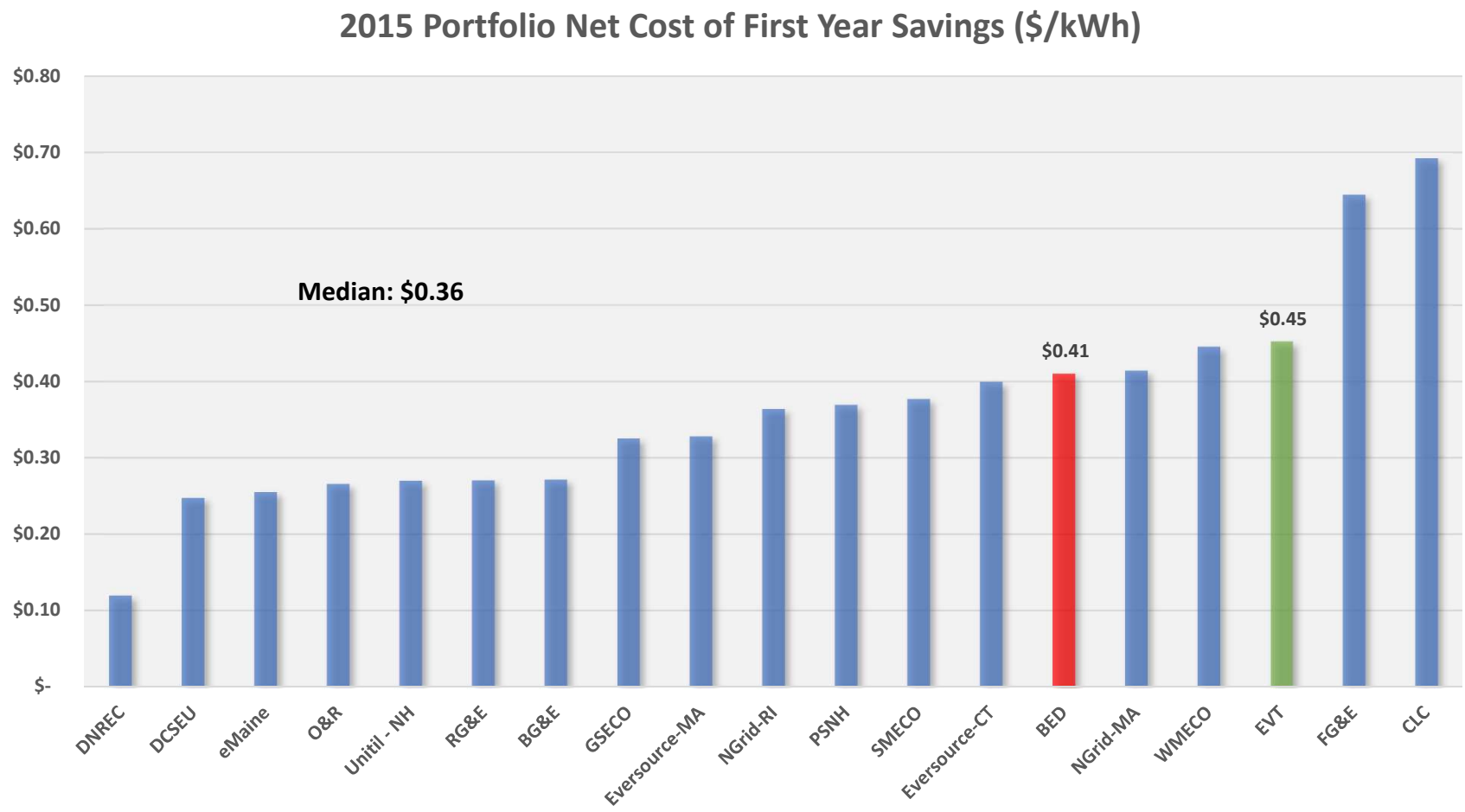
Similarly, in 2015 EVT and BED again had the highest Portfolio retail rates at $0.14/kWh, compared to the median rate of $0.12/kWh.



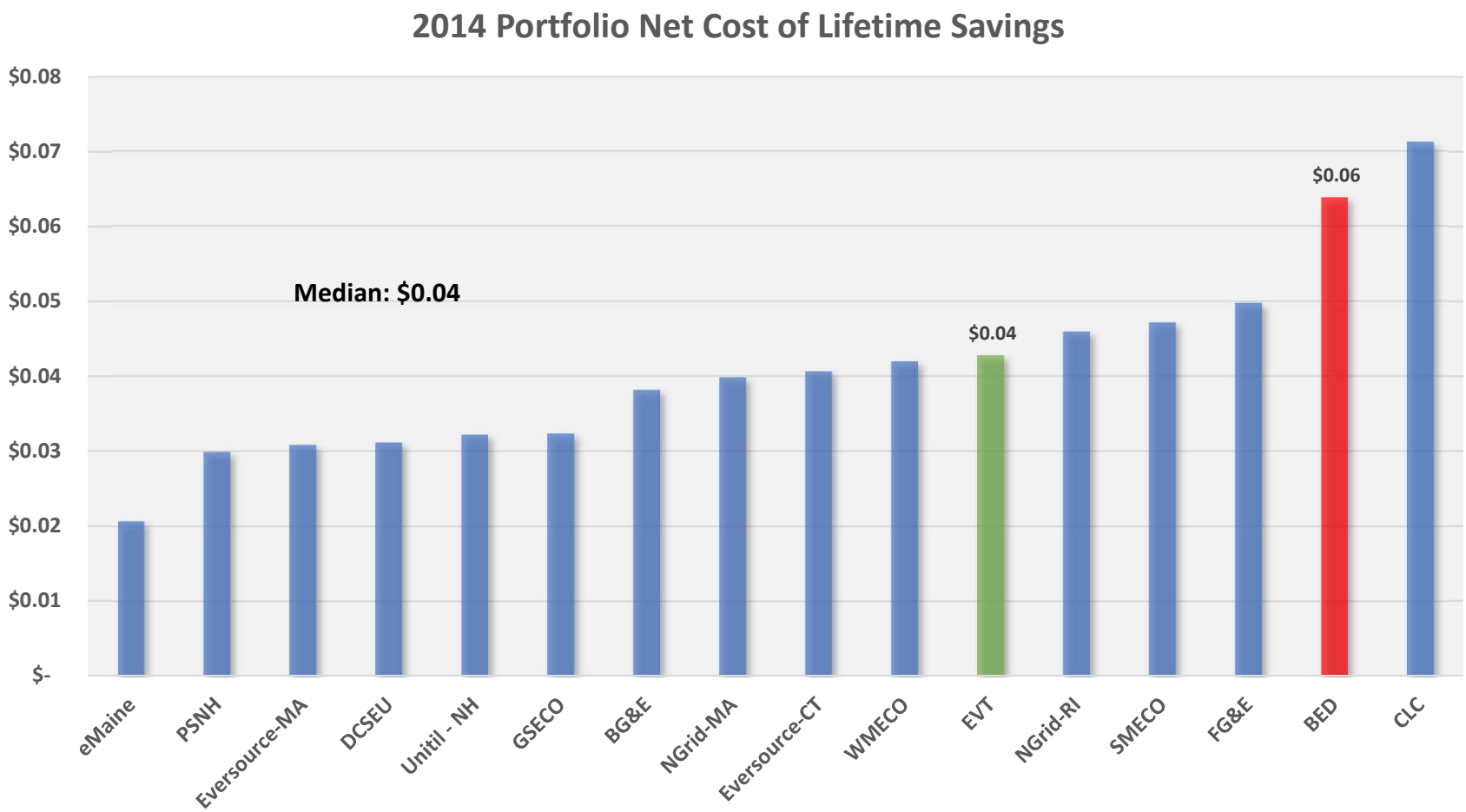
In 2014, EVT and BED had above median first year cost of saved energy at $0.52/kWh and $0.47/kWh, respectively, with the comparison group median at $0.39/kWh.



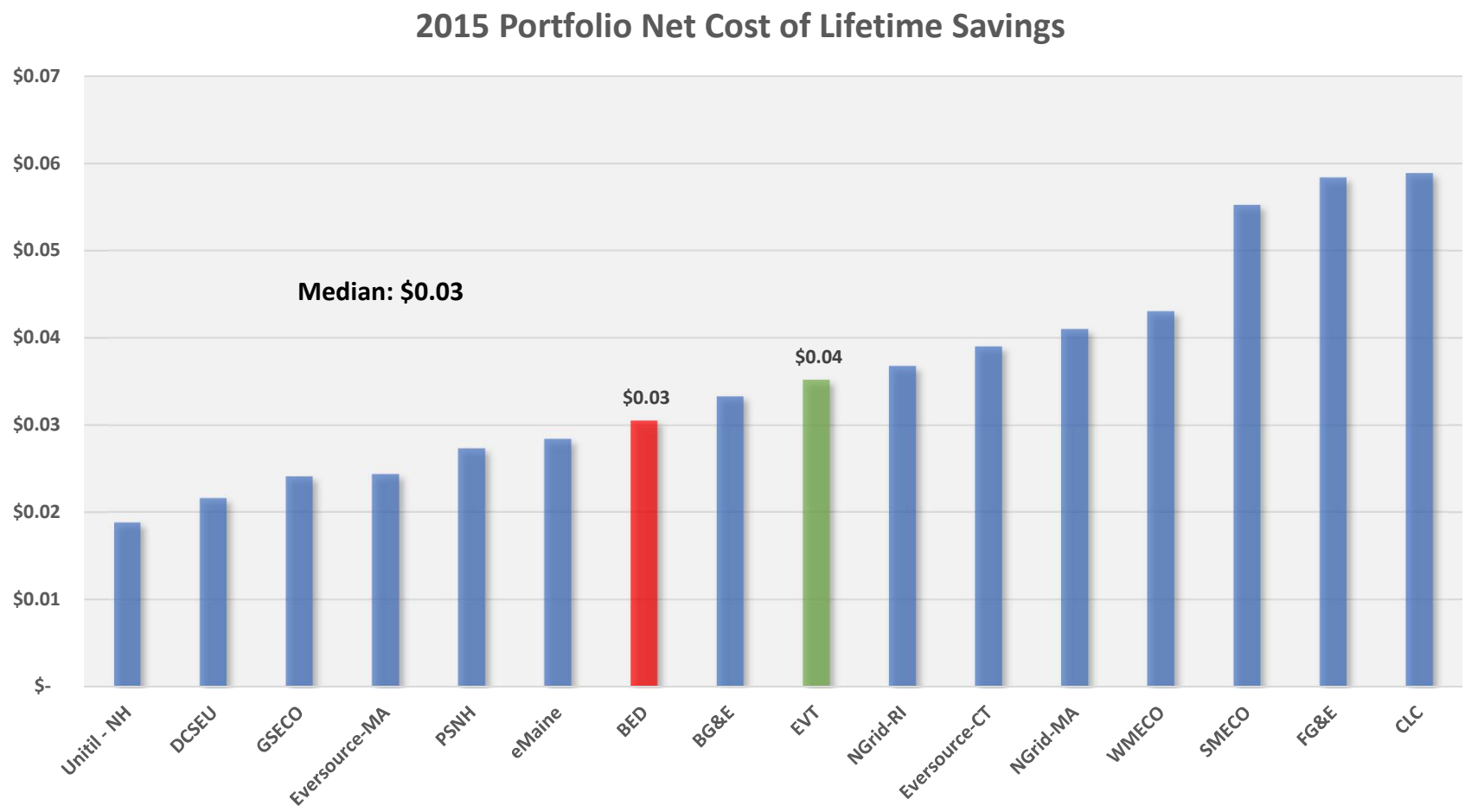
In 2015, EVT and BED again had higher than median Portfolio first year cost of saved energy at $0.45/kWh and $0.41/kWh, respectively. Both were above the median of the comparison group at $0.36/kWh



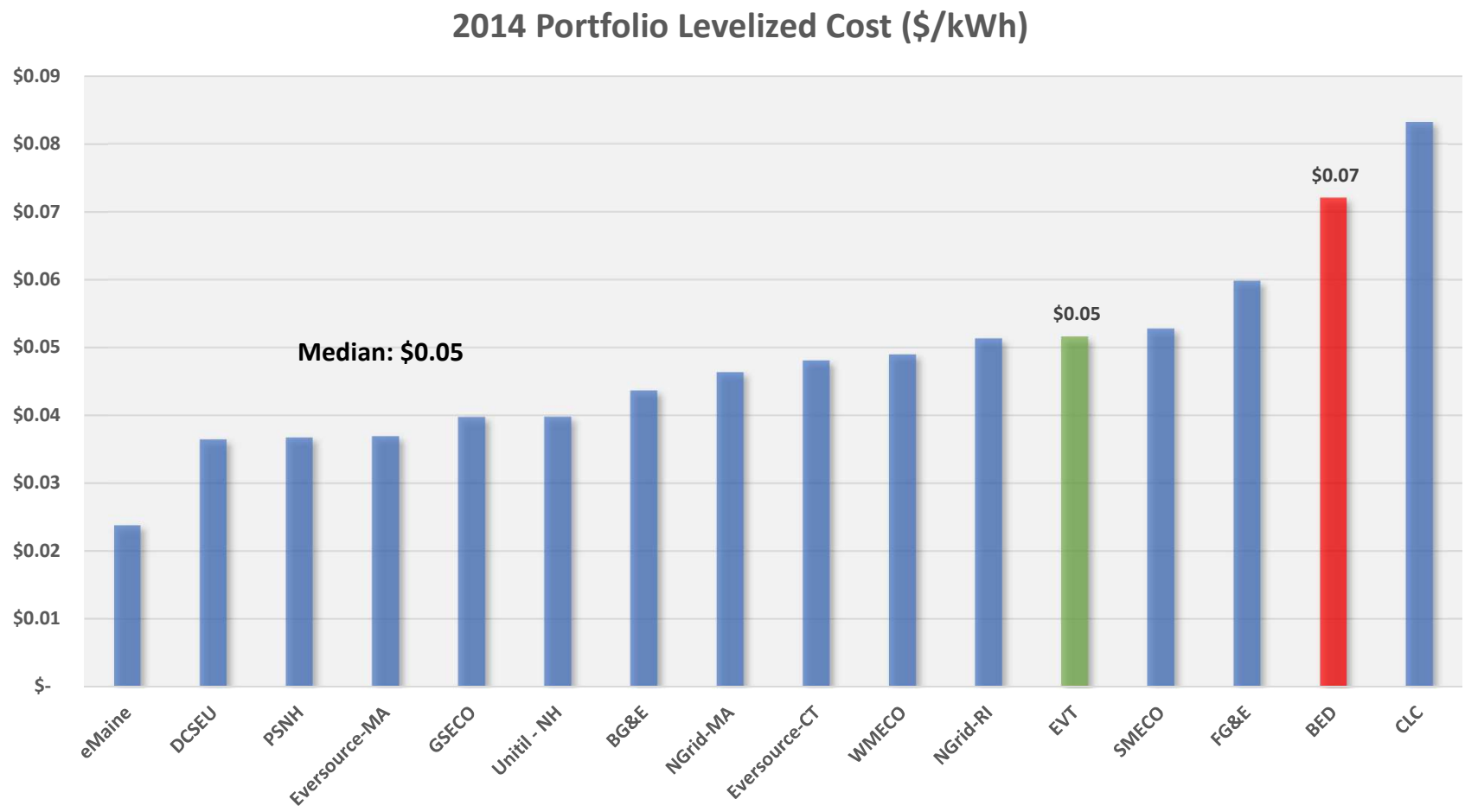
In 2014 EVT's Portfolio cost per lifetime kWh saved was above the median of $0.04/kWh at $0.06/kWh, while BED's was at the median at $0.04/kWh.



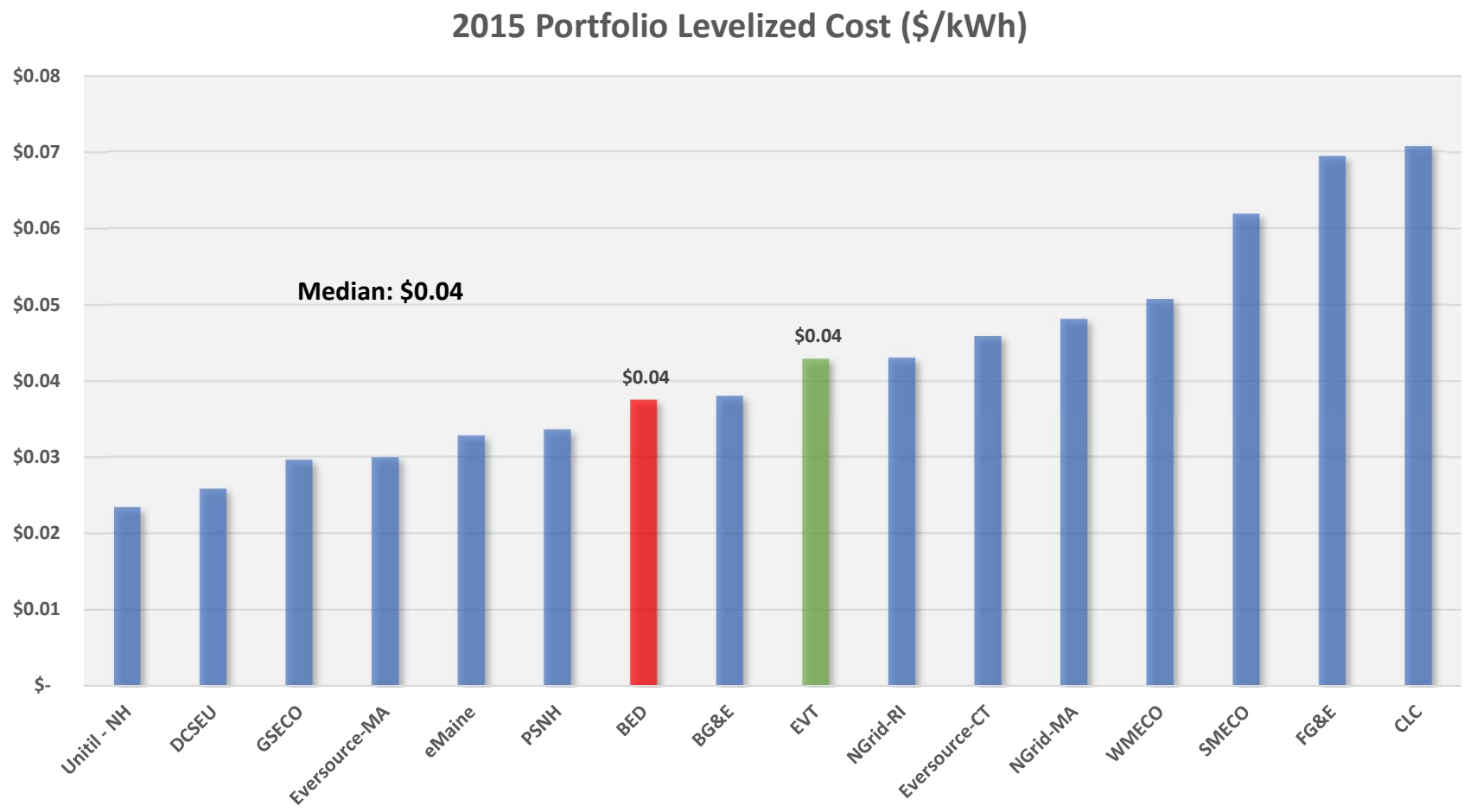
In 2015, EVT's Portfolio cost per lifetime kWh saved was above the median of $0.03/kWh at $0.04/kWh, while BED's was at the median at $0.03/kWh.



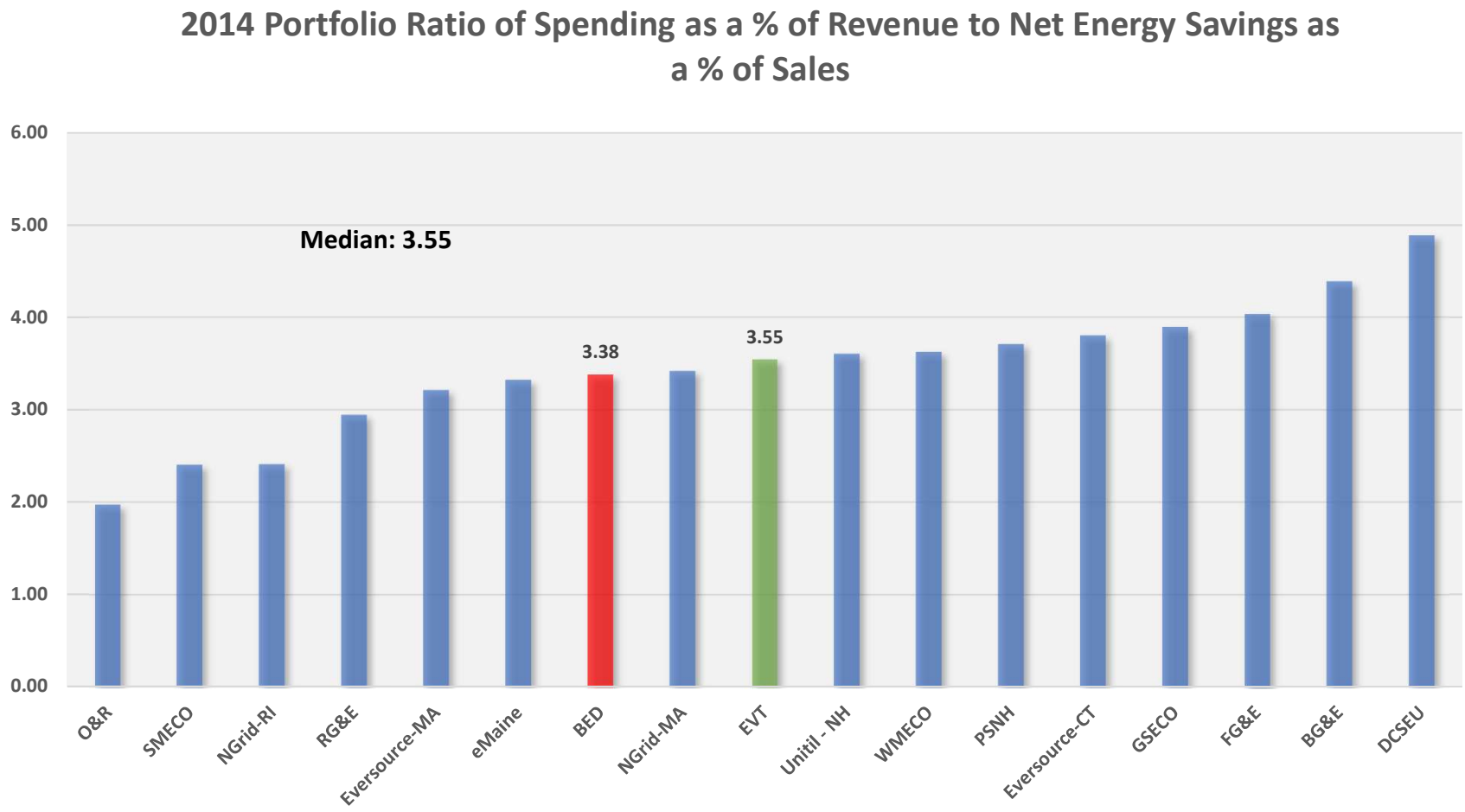
In 2014 EVT's levelized cost of saved energy of $0.05/kWh was equal to the median of $0.05/kWh, while BED's was above the median at $0.07/kWh.



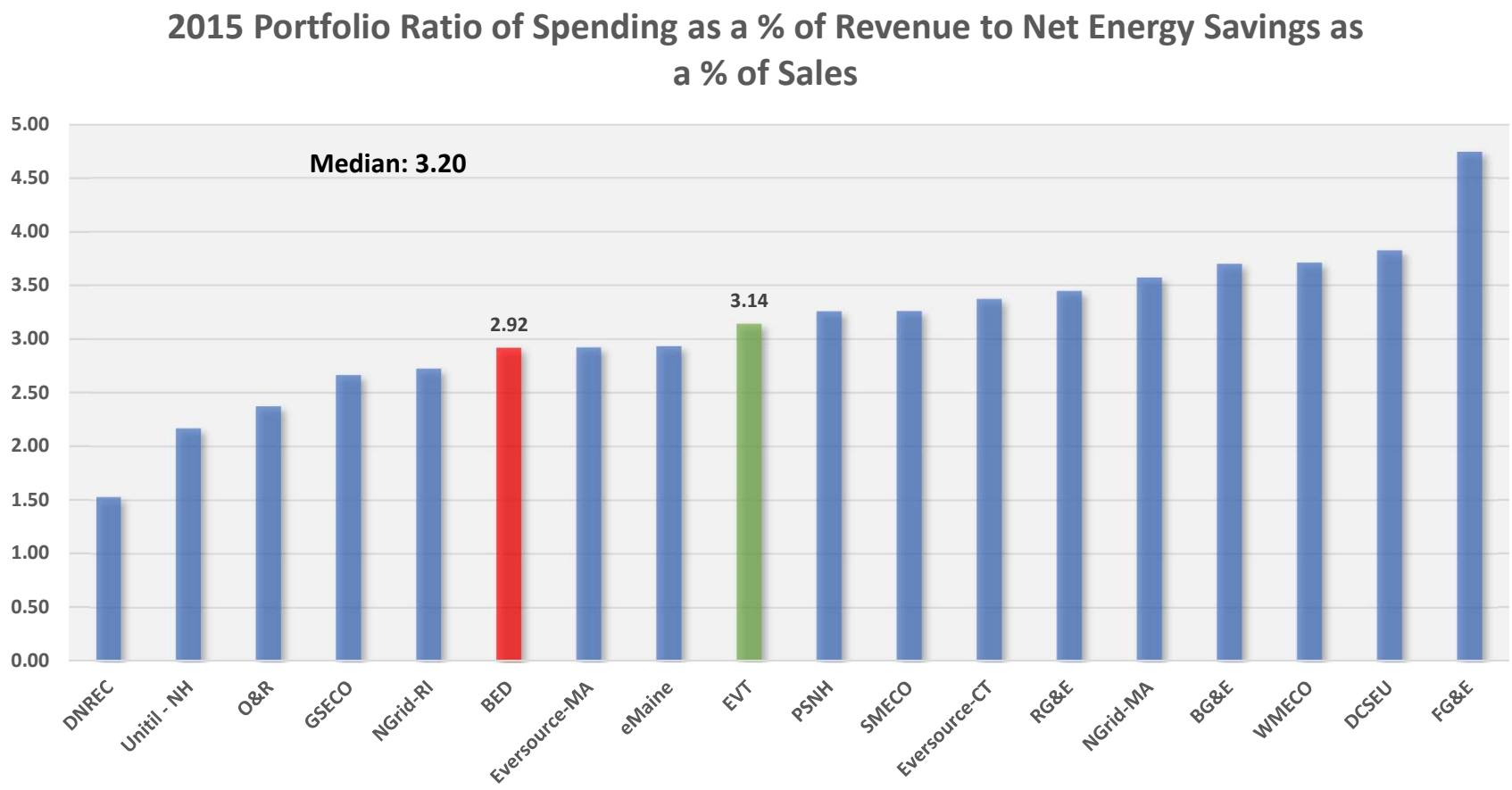
In 2015, EVT's levelized cost of saved energy of $0.04/kWh was at the median of $0.04/kWh, while BED's was below the median at $0.03/kWh



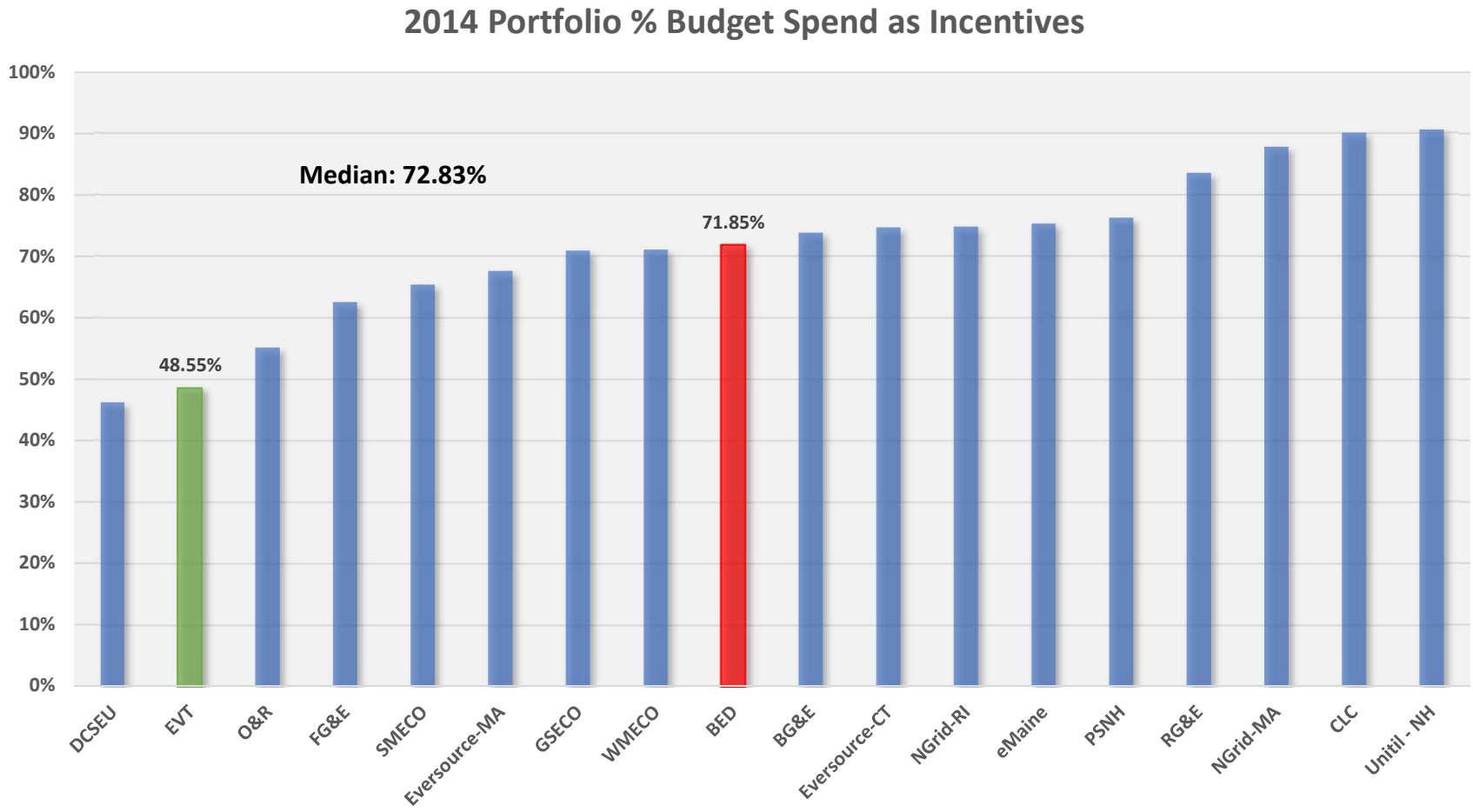
In 2014, BED's ratio of total efficiency spending as a percent of revenue to savings as a percent of sales was 3.38, which was below the median of 3.55, while EVT's was at the median.



In 2015, EVT's and BED's ratios of total efficiency spending as a percent of revenue to savings as a percent of sales were 3.14 and 2.72, both below the median at 3.20.



In 2014, EVT spent 48.55% of its Portfolio efficiency budget as incentives, below the median of 72.83%. BED's incentive spending was slightly below the median at 71.85%.



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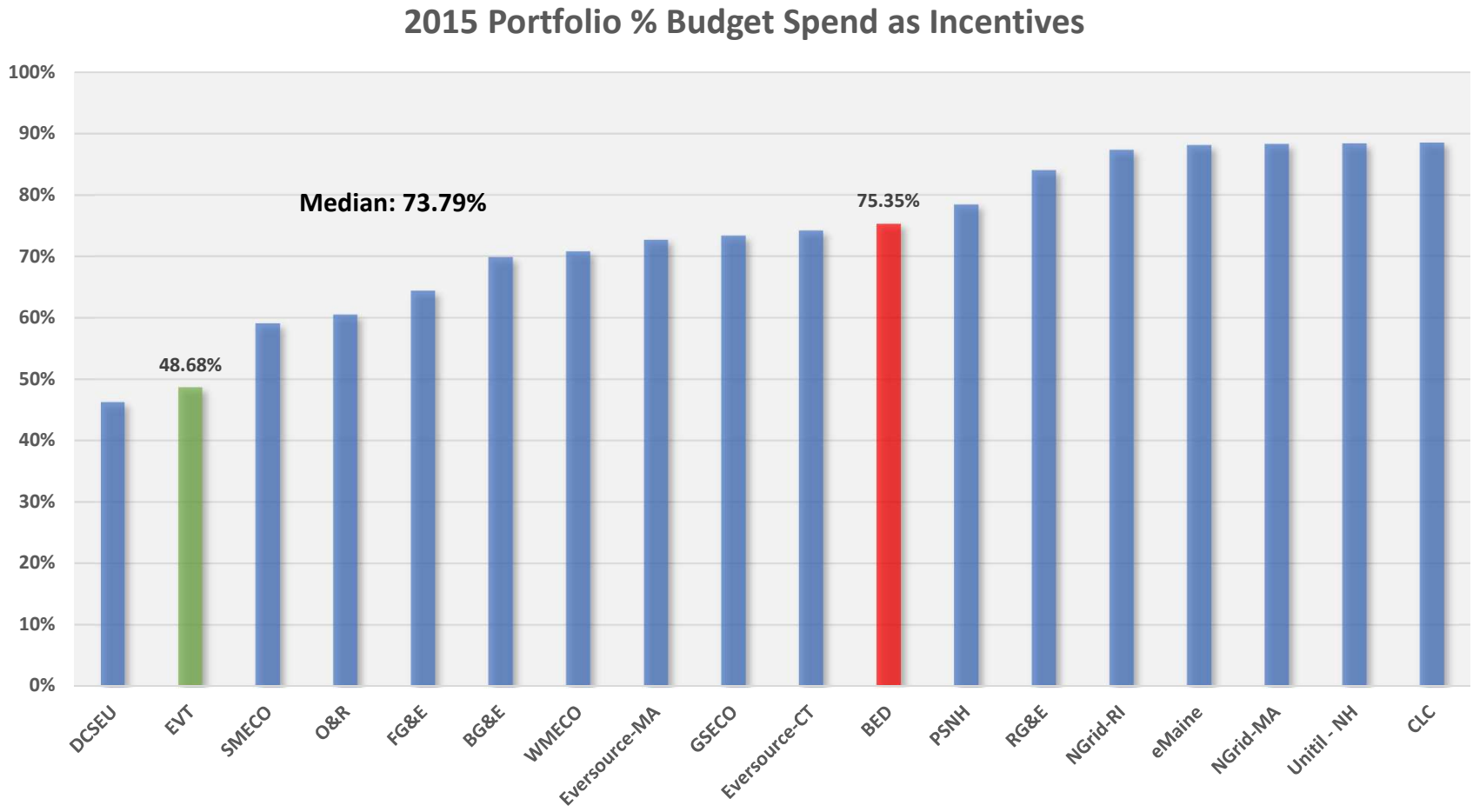
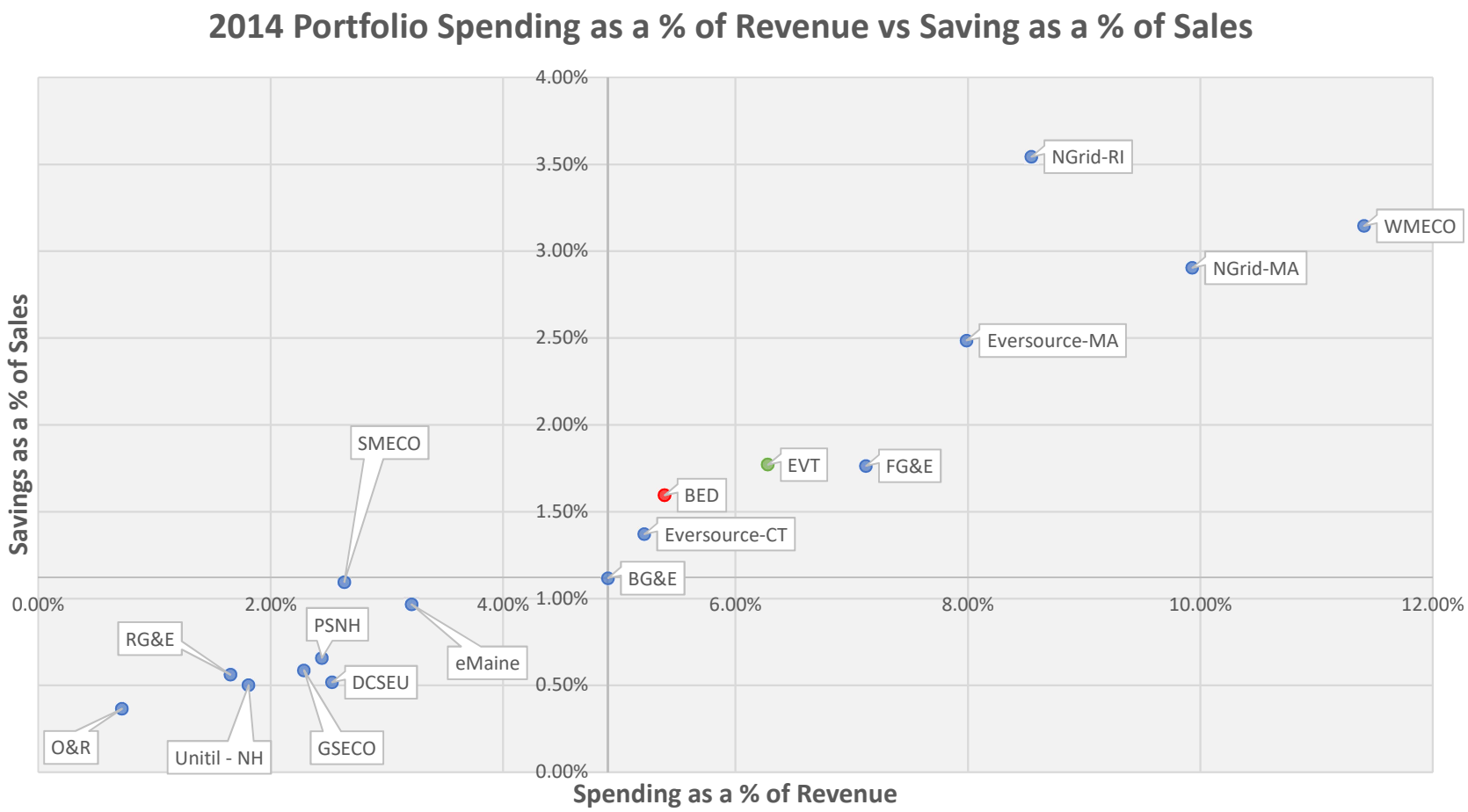
In 2015, EVT spent 48.68% of its Portfolio efficiency budget as incentives, below the median of 73.79%. BED's incentive spending was above the median at 75.35%.



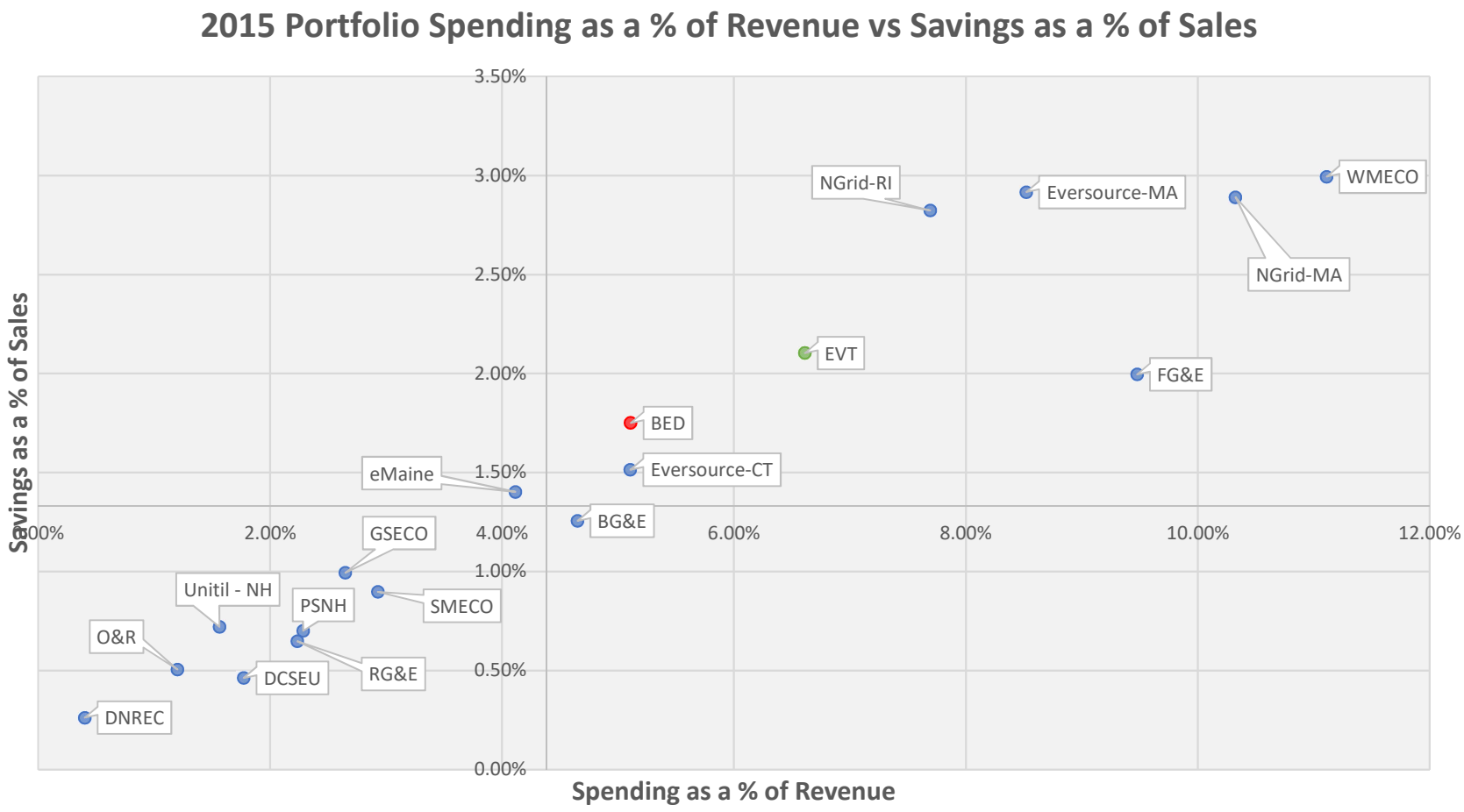
Overall Spending as % of Revenue and Energy Savings as % of Sales – Scatter Plot

- For the PAs reviewed, the scatter plot chart illustrates what each organization is achieving in terms of spending as a percentage of revenue and energy savings as a percentage of sales.
- The higher the location of the data point, the larger the savings as a percent of sales
- The further to right the data point is, the greater the spending as a percentage of revenue.

In 2014, both EVT and BED had higher spending as a percent of revenue and higher savings as a percent of sales than the comparison group medians.



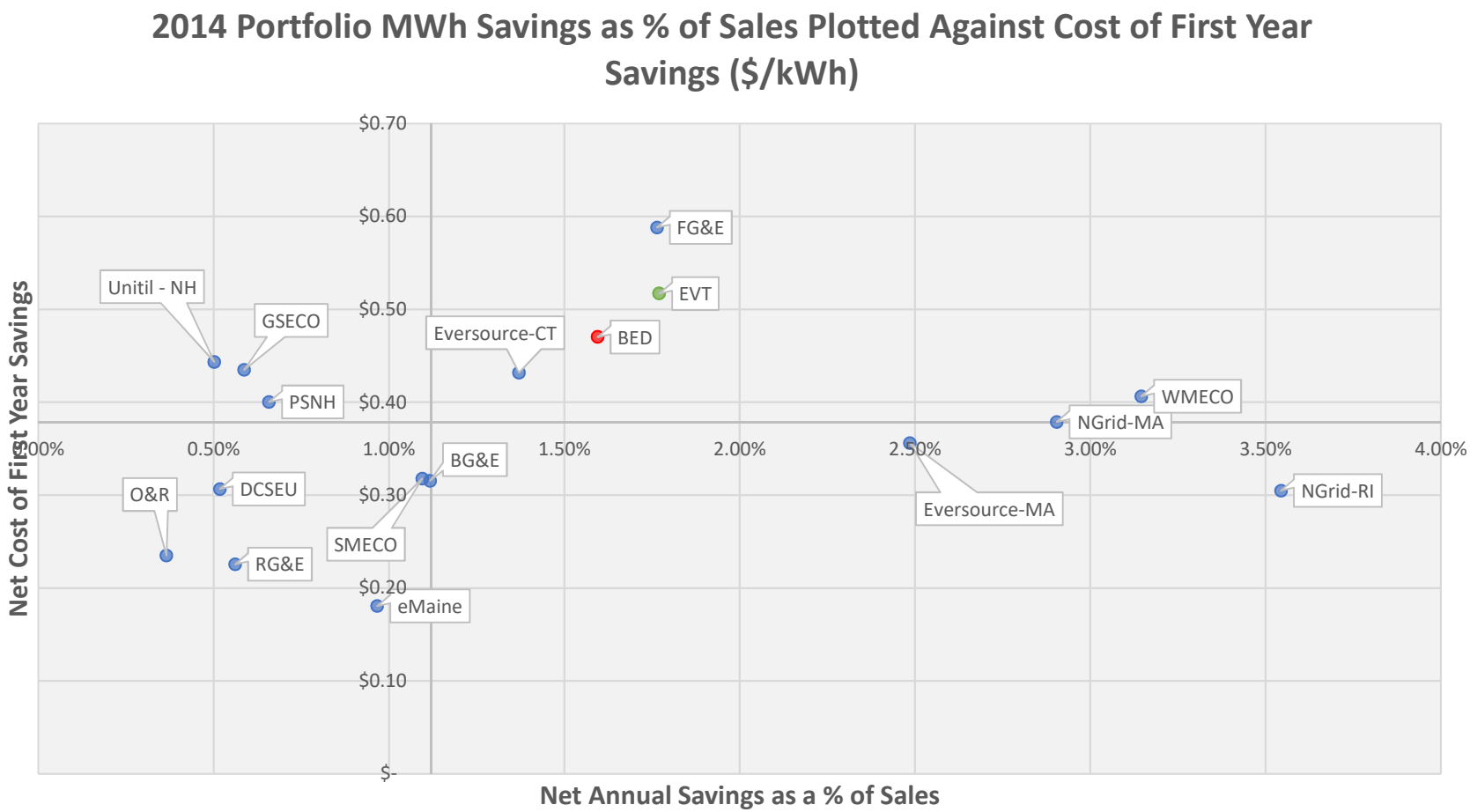
In 2015, both EVT and BED had higher spending as a percent of revenue and higher savings as a percent of sales than the comparison group medians.



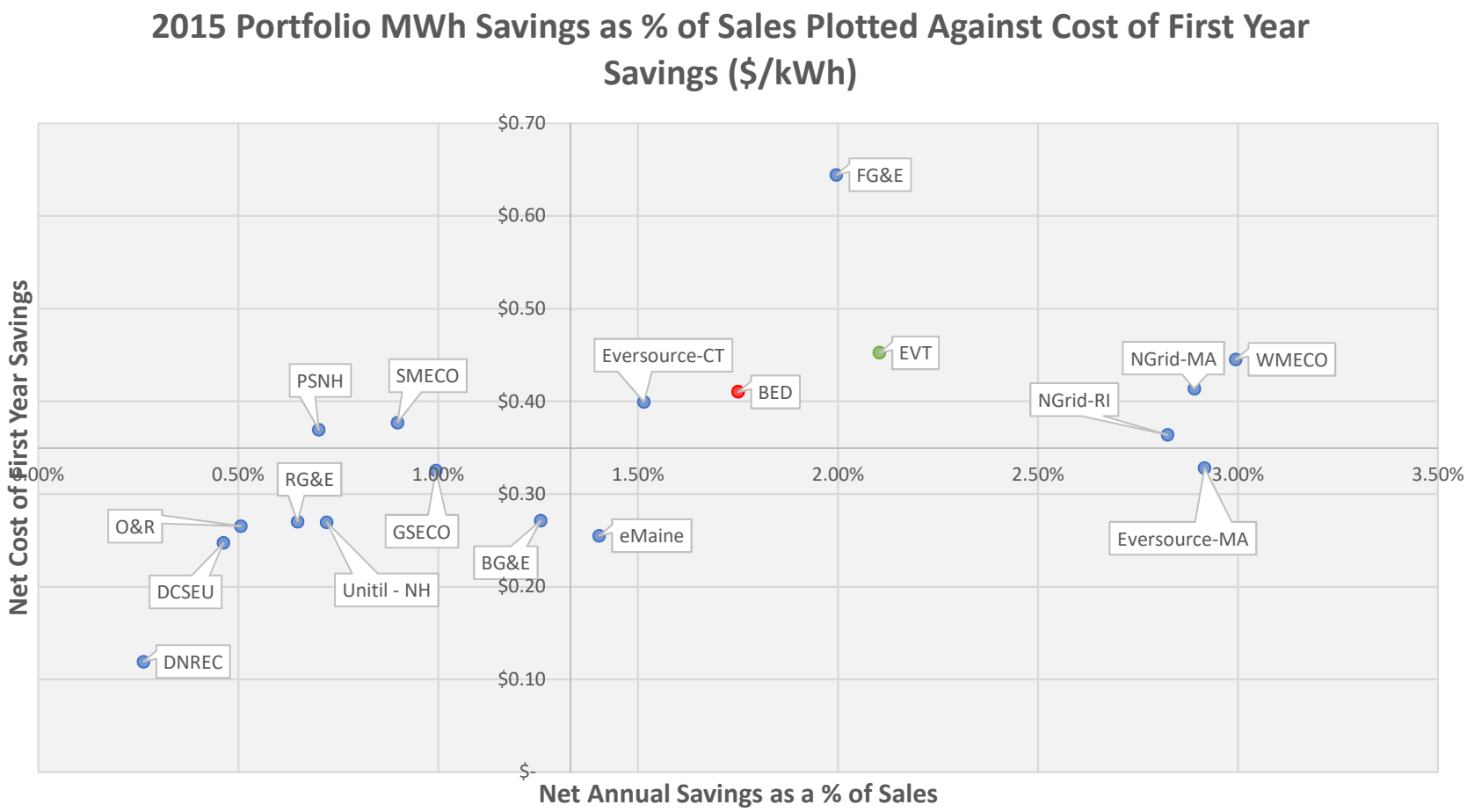
Overall Energy Savings as % of Sales and Cost of First Year Energy Savings, $/kWh – Scatter Plot

- For the PAs reviewed, the scatter plot illustrates where each organization falls relative to median energy savings and median costs of savings.
- Energy savings as a percentage of sales is on the horizontal axis; first year cost of energy savings is on the vertical axis; and the axes are set at the median values.
- Thus, the PAs in the bottom right quadrant are the ones that achieved above median energy savings at costs below the median, i.e., high savings, low costs.

In 2014, EVT and BED had both higher then median Portfolio savings as a percent of sales and higher net cost per first year saved kWh.



In 2015, EVT and BED had both higher then median Portfolio savings as a percent of sales and higher net cost per first year saved kWh.



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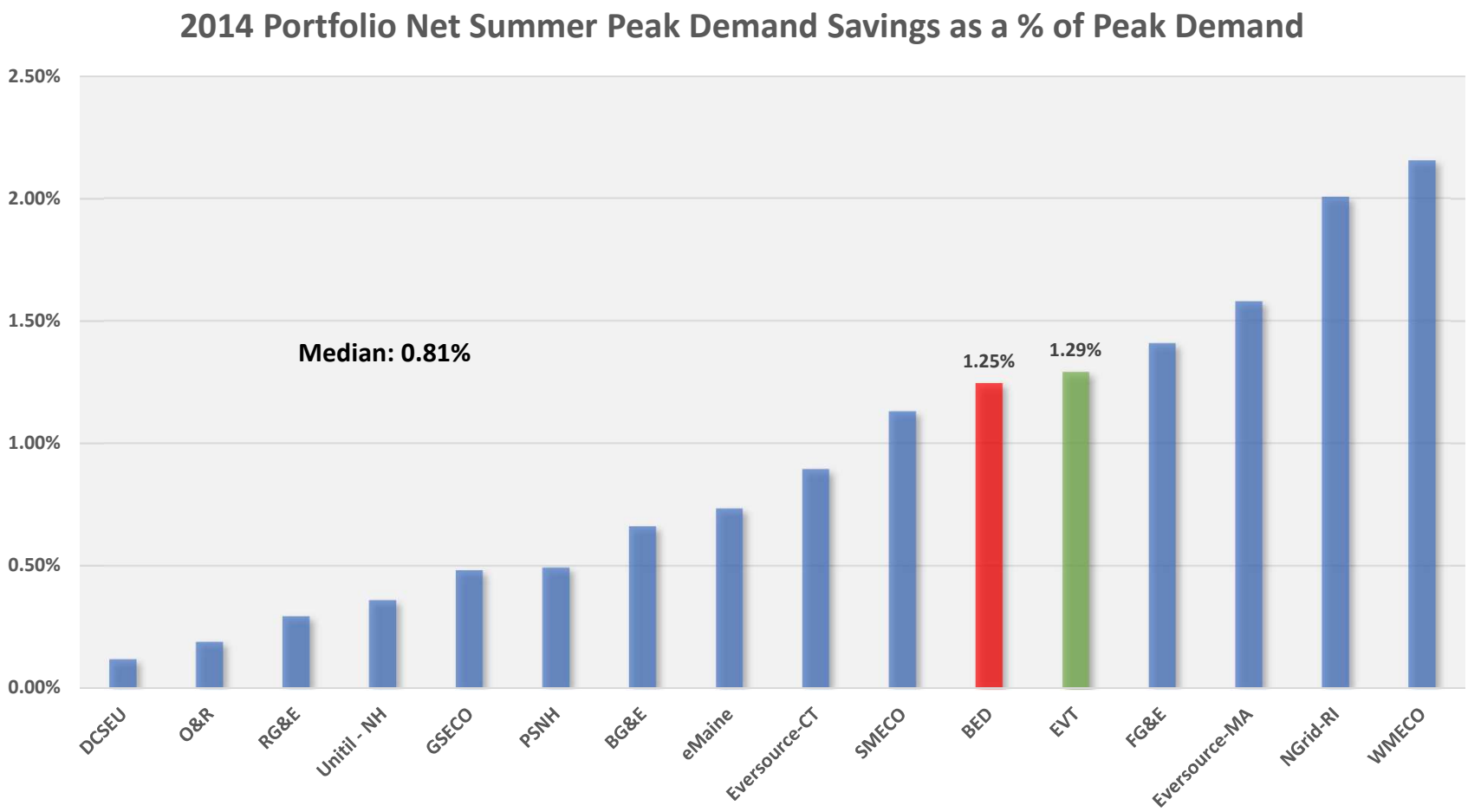
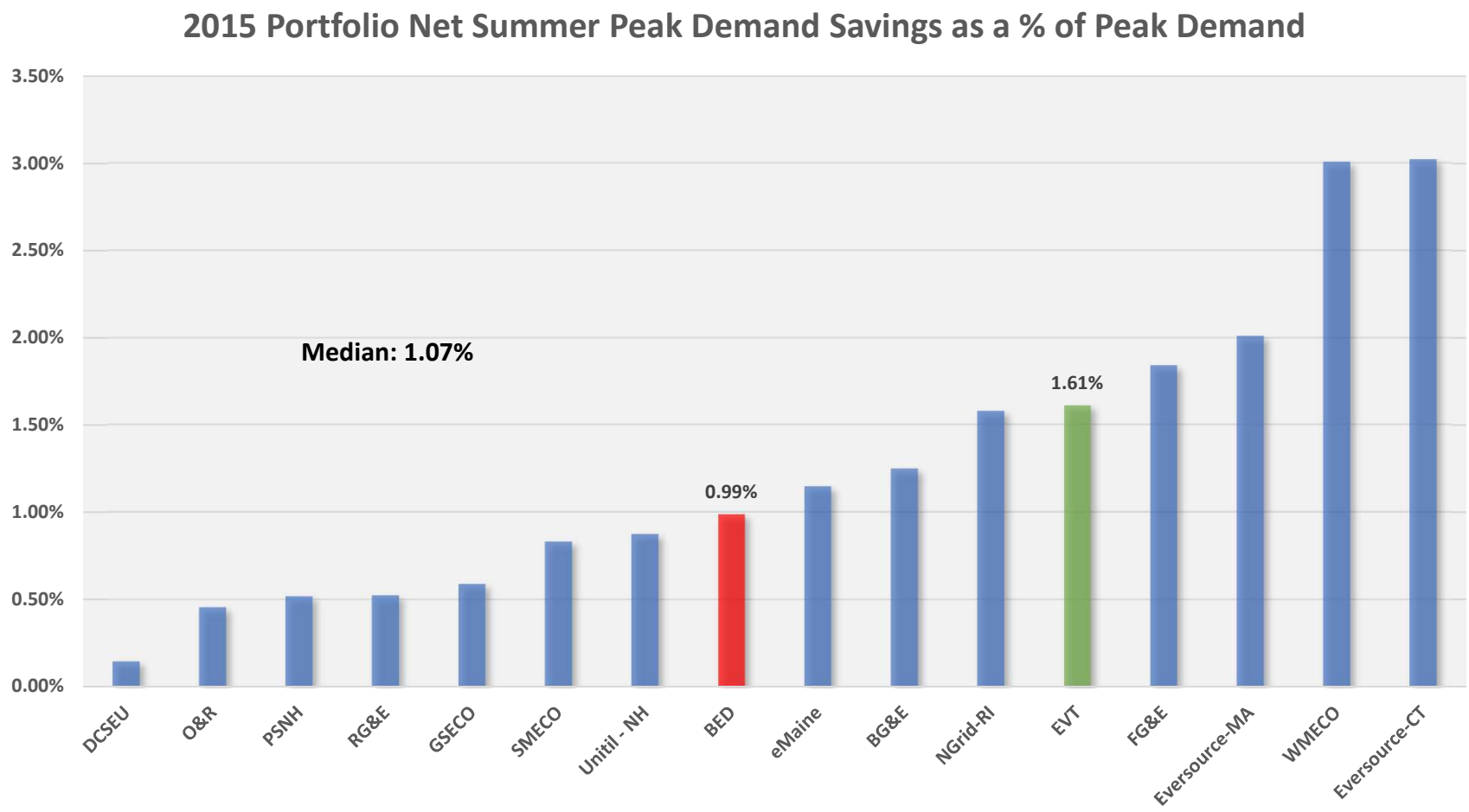
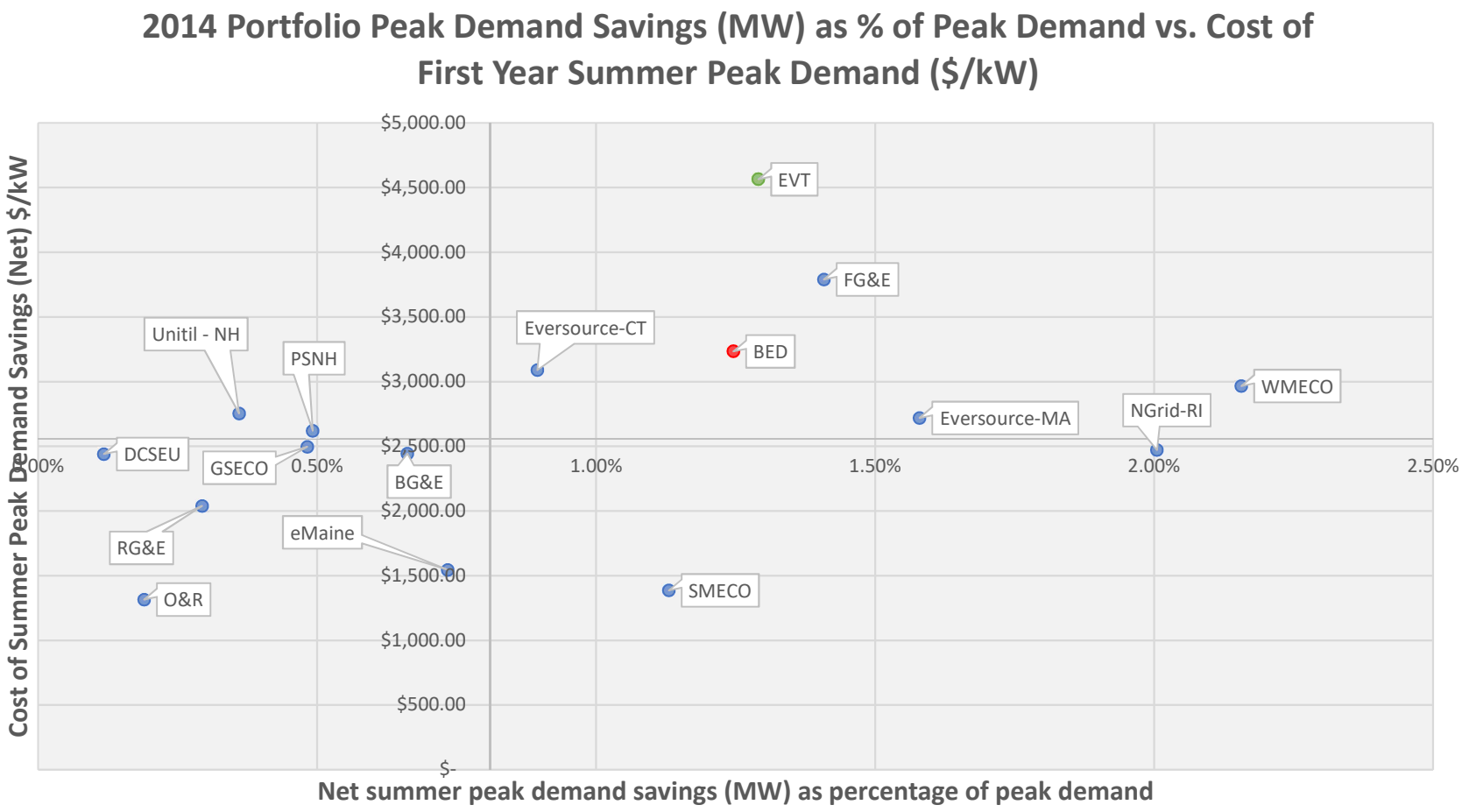
In 2014, BED and EVT both had summer demand savings as a % of peak demand above the comparison group median value of 0.81%, at 1.25% and 1.29%, respectively.



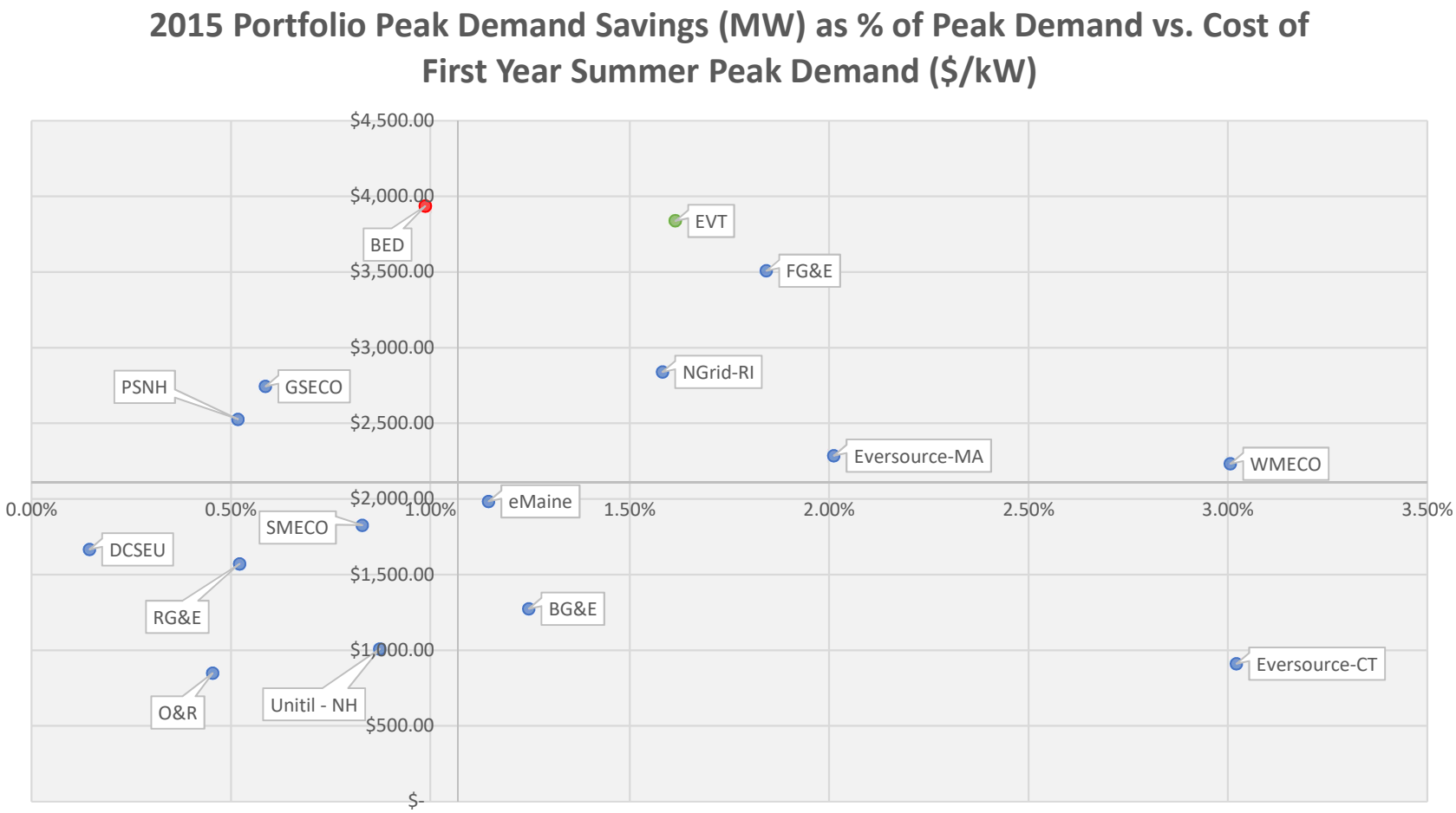
In 2015, BED's summer demand savings of 0.99% of peak were less than the comparison group median of 1.07%, while EVT's summer demand savings were above the median at 1.61%.



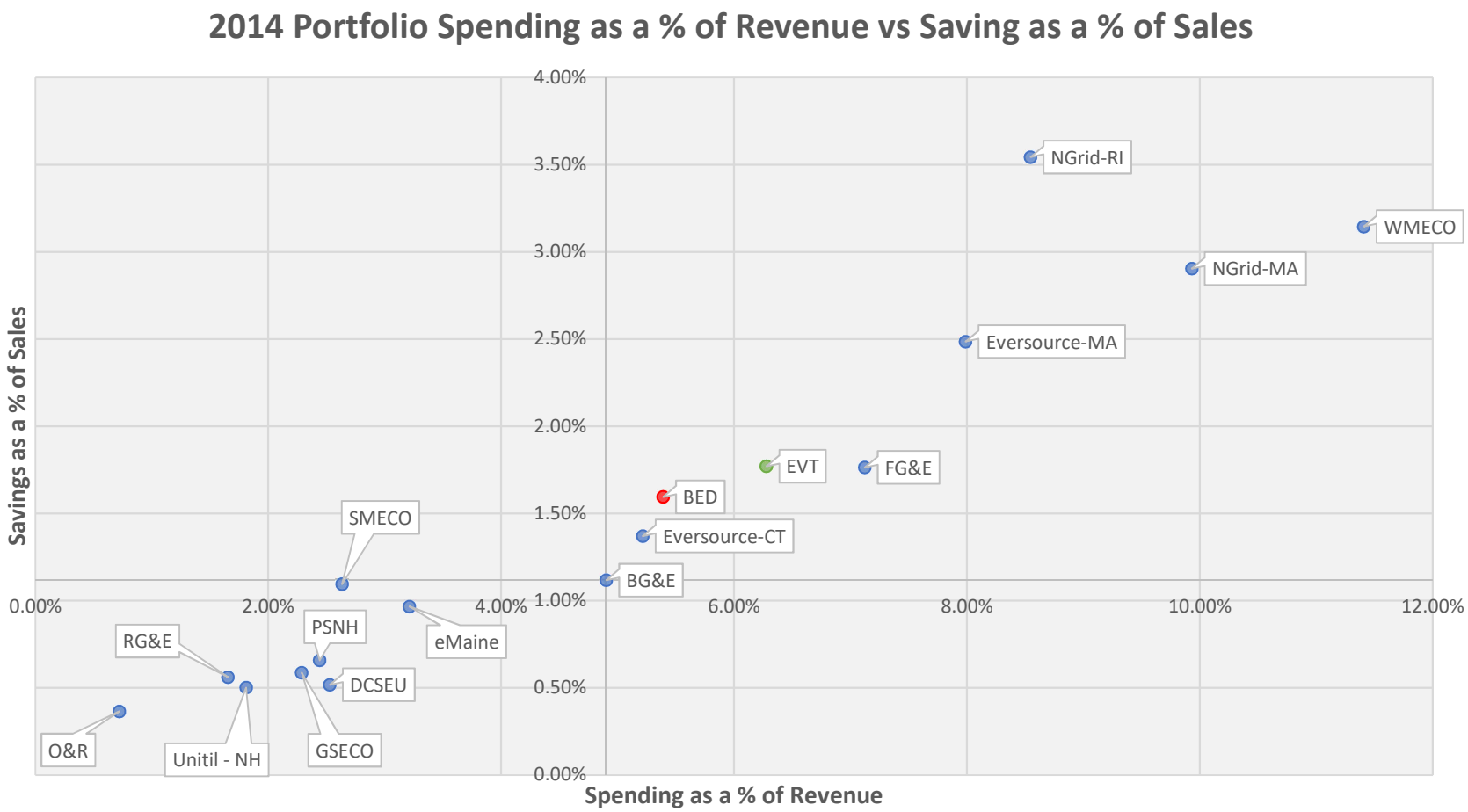
In 2014, EVT and BED both had higher then median Portfolio demand savings as a percent of peak demand. Both had higher net cost per first year saved summer kW.



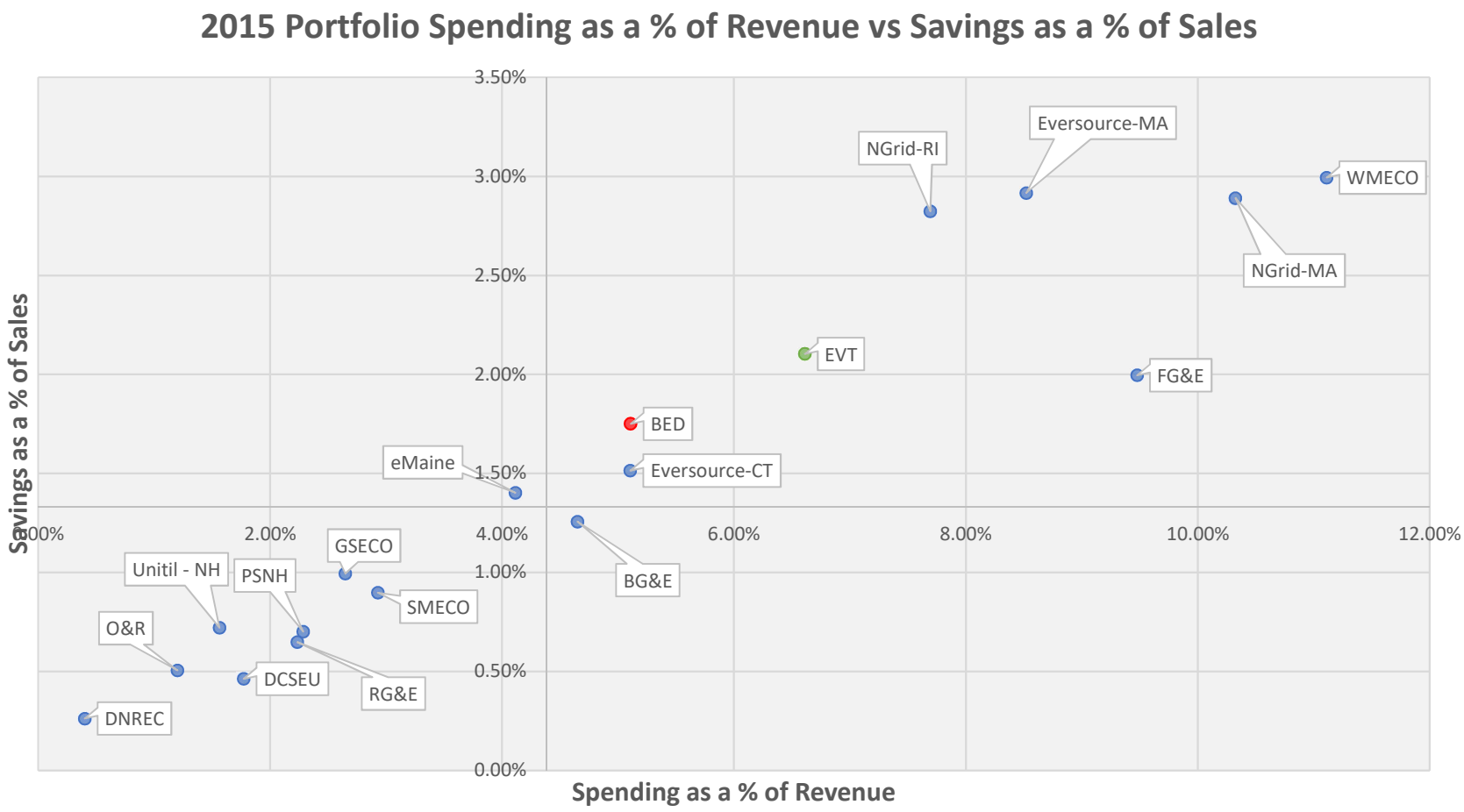
In 2015, EVT had higher then median Portfolio demand savings as a percent of peak demand while BED's savings were lower than the median. Both had higher than median net cost per first year saved summer kW.



in 2014, both EVT and BED had higher then median Portfolio savings as a percent of sales and net cost per first year saved kWh.



Similarly, in 2015, both EVT and BED had higher then median Portfolio savings as a percent of sales and net cost per first year saved kWh.



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Section 3:
2014 and 2015 Electric C&I Benchmarking Results

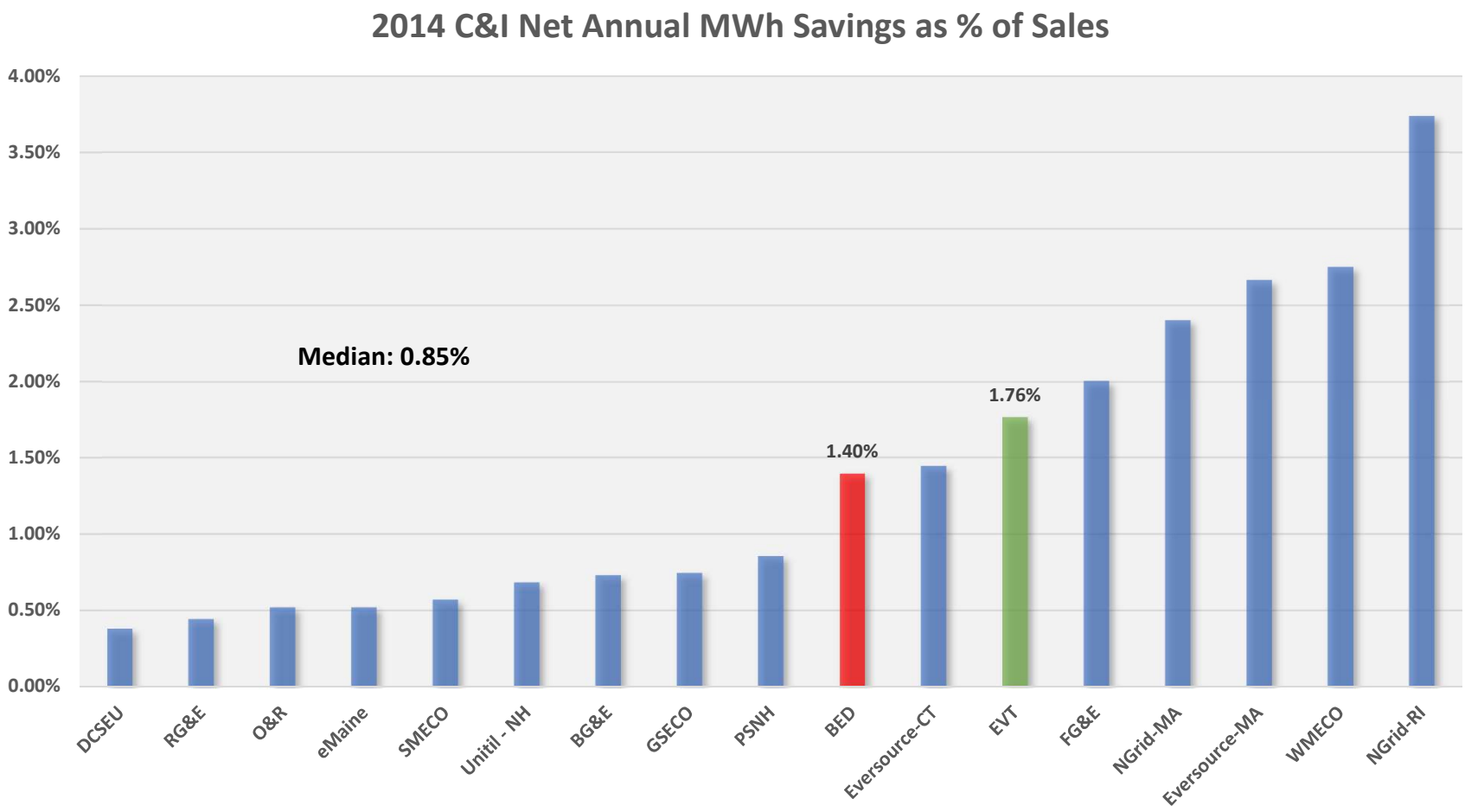
Section 3: 2014 Electric C&I Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	5.0%	0.9%	$0.09	$0.34	$0.04	$0.03
EVT	7.2%	1.8%	$0.13	$0.52	$0.05	$0.04
BED	5.0%	1.4%	$0.13	$0.48	$0.10	$0.09

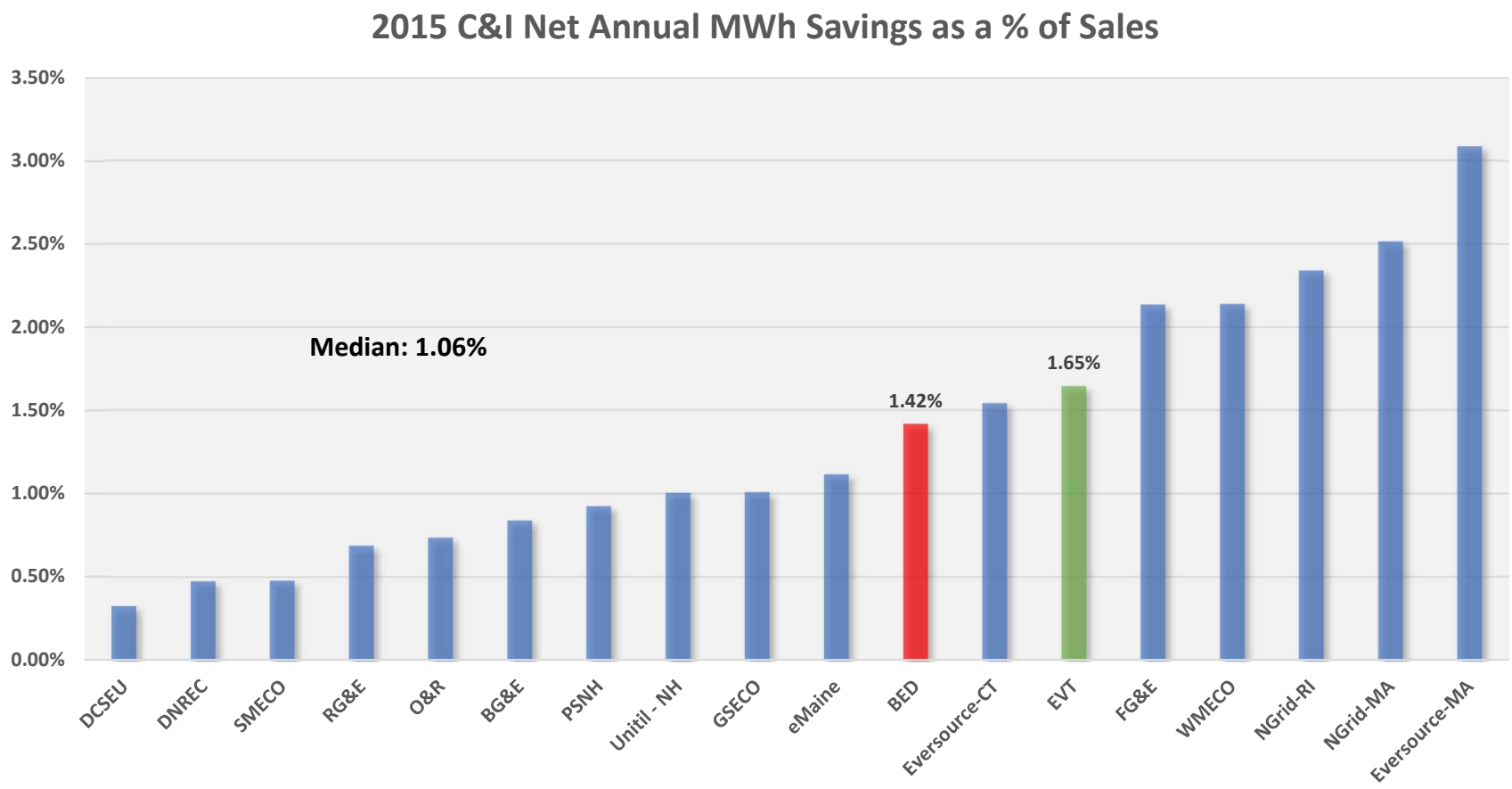
Section 3: 2015 Electric C&I Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	5.3%	1.1%	$0.08	$0.35	$0.04	$0.03
EVT	6.4%	1.7%	$0.13	$0.49	$0.05	$0.04
BED	4.3%	1.4%	$0.14	$0.45	$0.04	$0.03

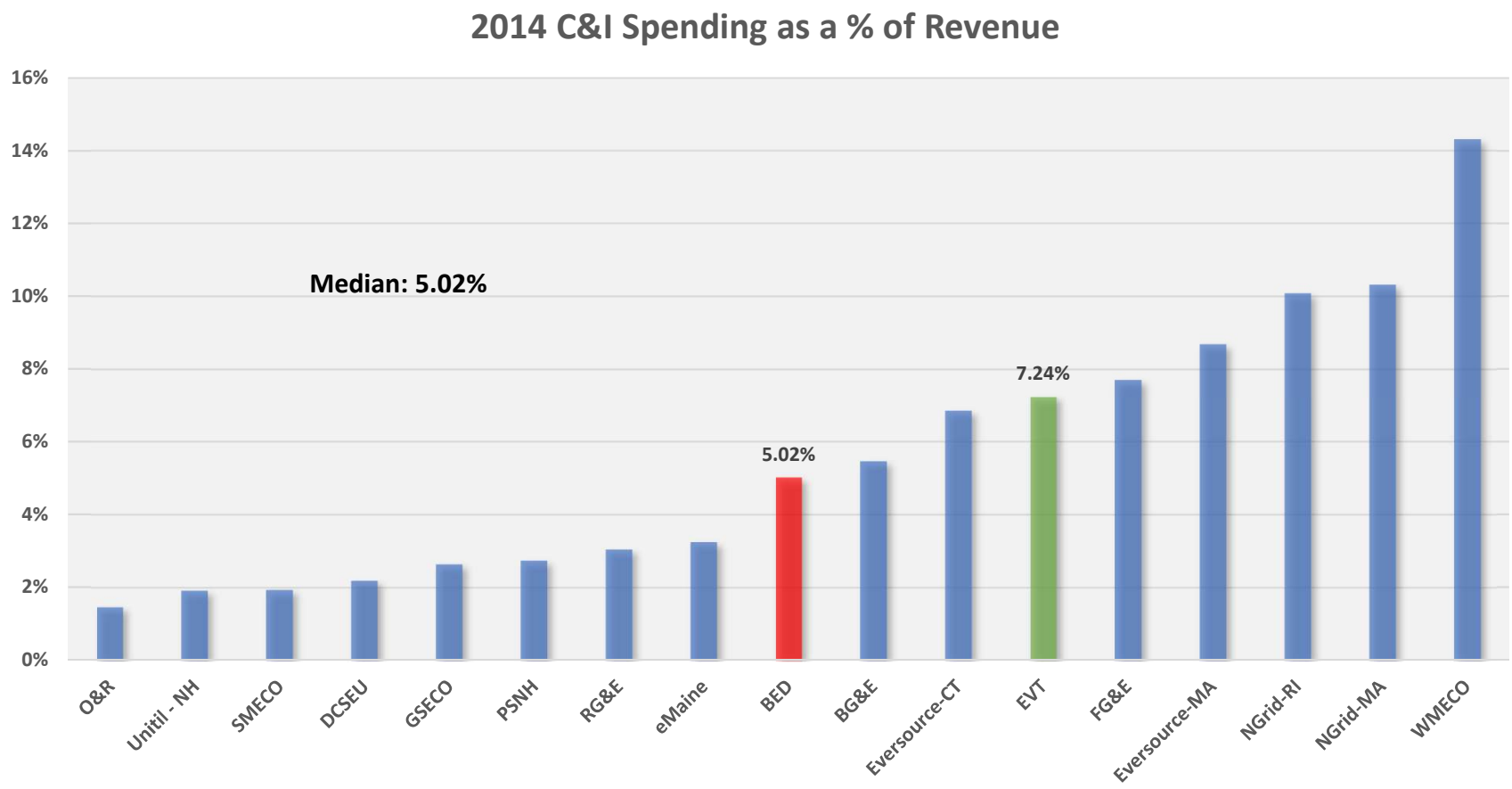
In 2014, EVT and BED had net annual C&I MWh savings as a % of C&I sales of 1.76% and 1.40%, respectively, while the median was 0.85%.



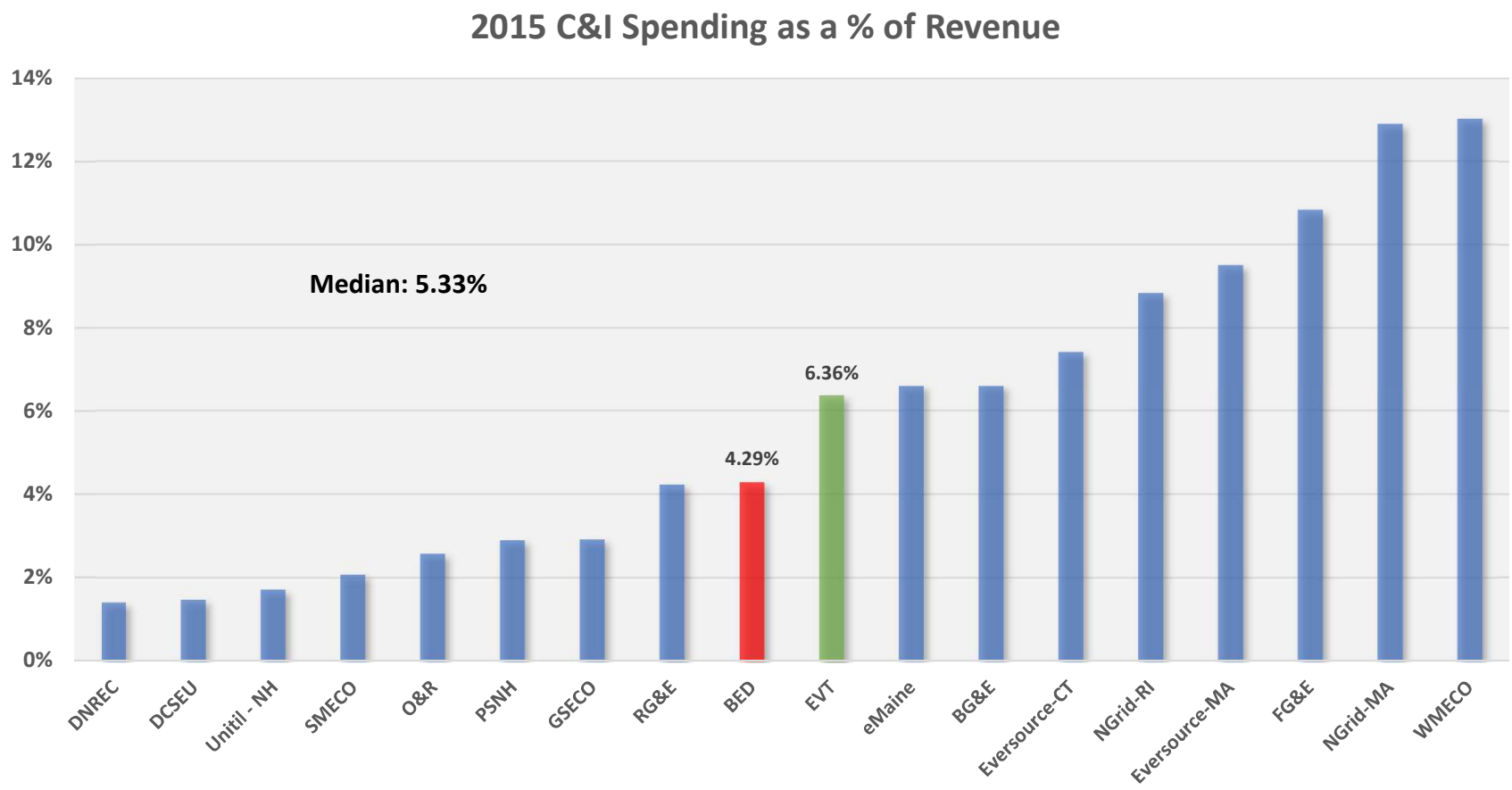
In 2015, EVT and BED's net annual C&I savings as a percentage of C&I sales were both above the median of 1.06% at 1.65% and 1.42%, respectively.



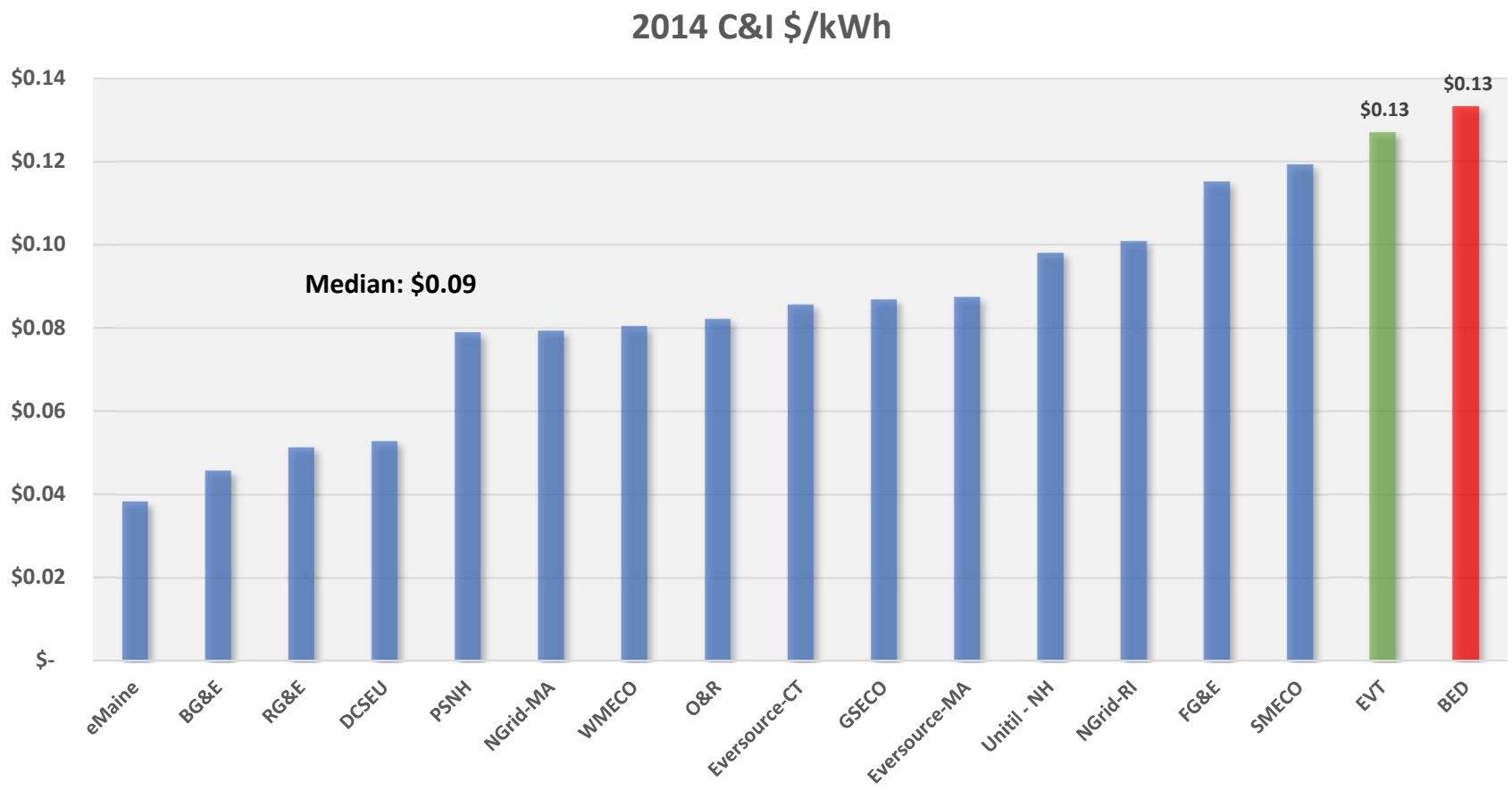
In 2014 EVT's C&I spending was 7.24% of C&I revenue, above the median of 5.02%. BED's was equal to the median, at 5.02%.



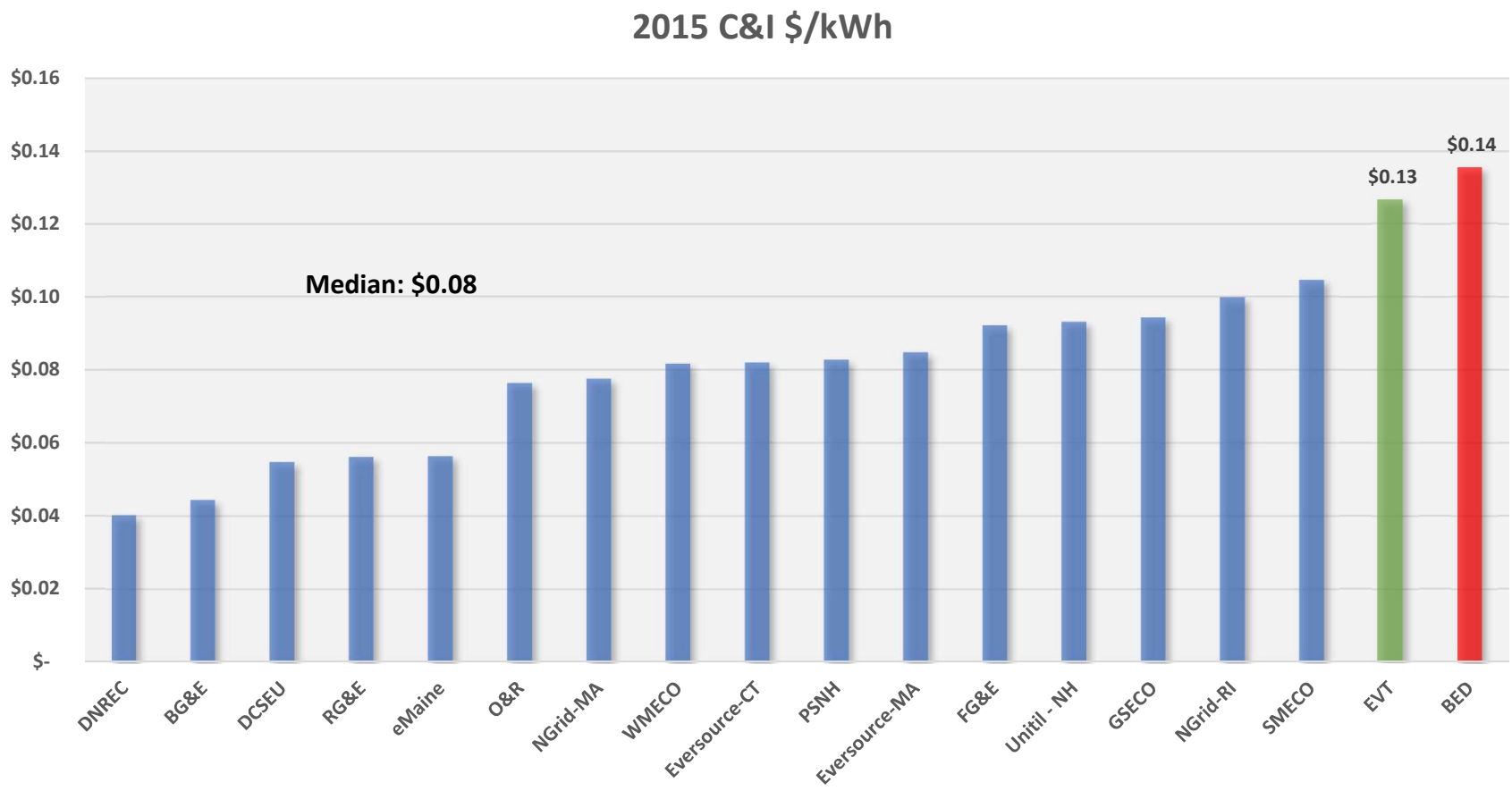
In 2015 EVT's C&I spending was 6.36% of C&I revenue, above the median of 5.33%, while BED was below the median at 4.29%.



In 2014 EVT and BED had the highest C&I retail rates at $0.13/kWh, compared to the median of $0.09/kWh.



Similarly, in 2015 EVT and BED had the highest C&I retail rates at $0.13/kWh and $0.14/kWh, respectively, compared to the median of $0.08/kWh.



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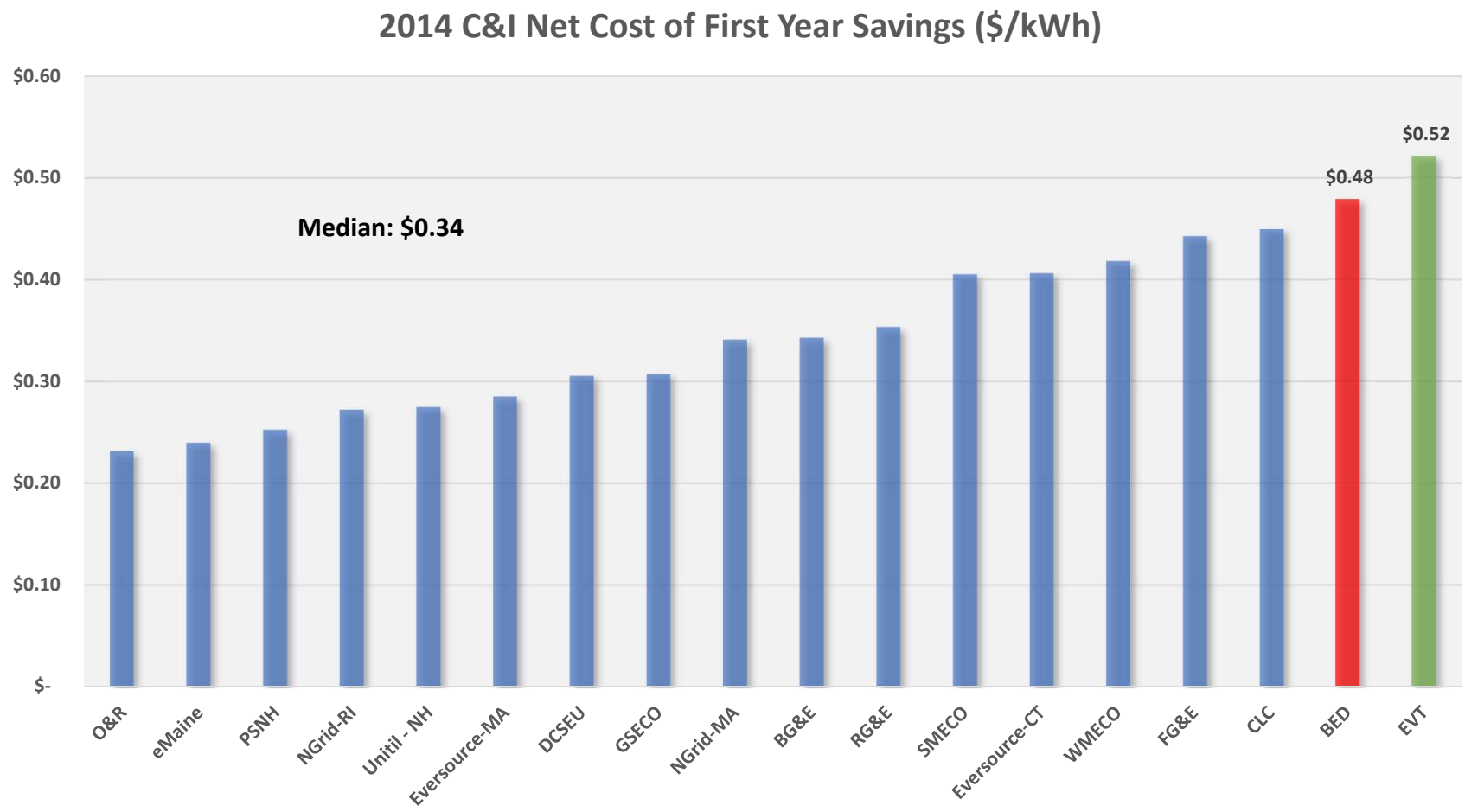
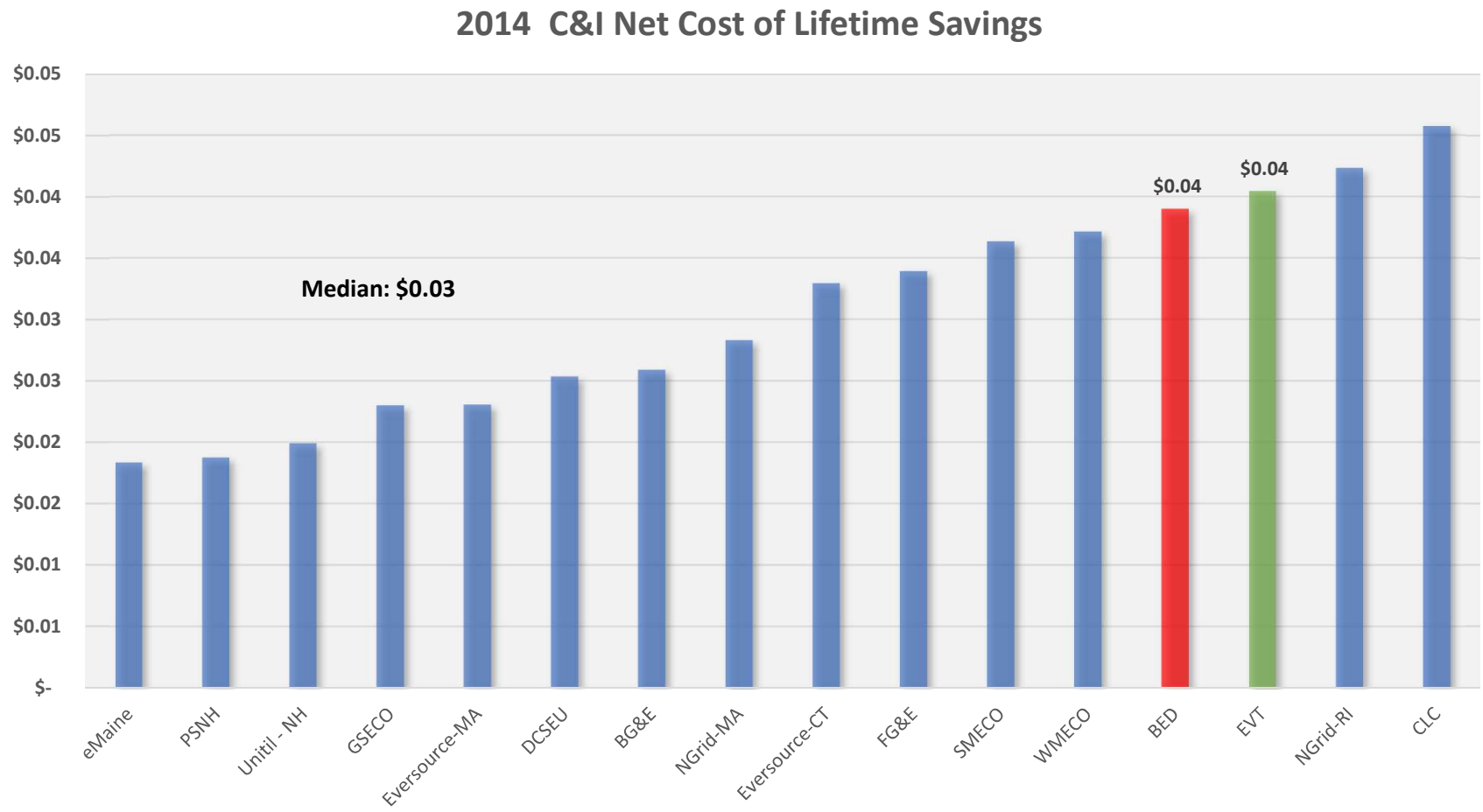
In 2014, EVT and BED had the highest first year C&I costs per kWh saved at $0.52/kWh and $0.48/kWh, respectively, compared to the median of $0.34/kWh.



In 2014, EVT's and BED's C&I lifetime costs per kWh saved of $0.04/kWh and $0.09, respectively, were above the median of $0.03/kWh



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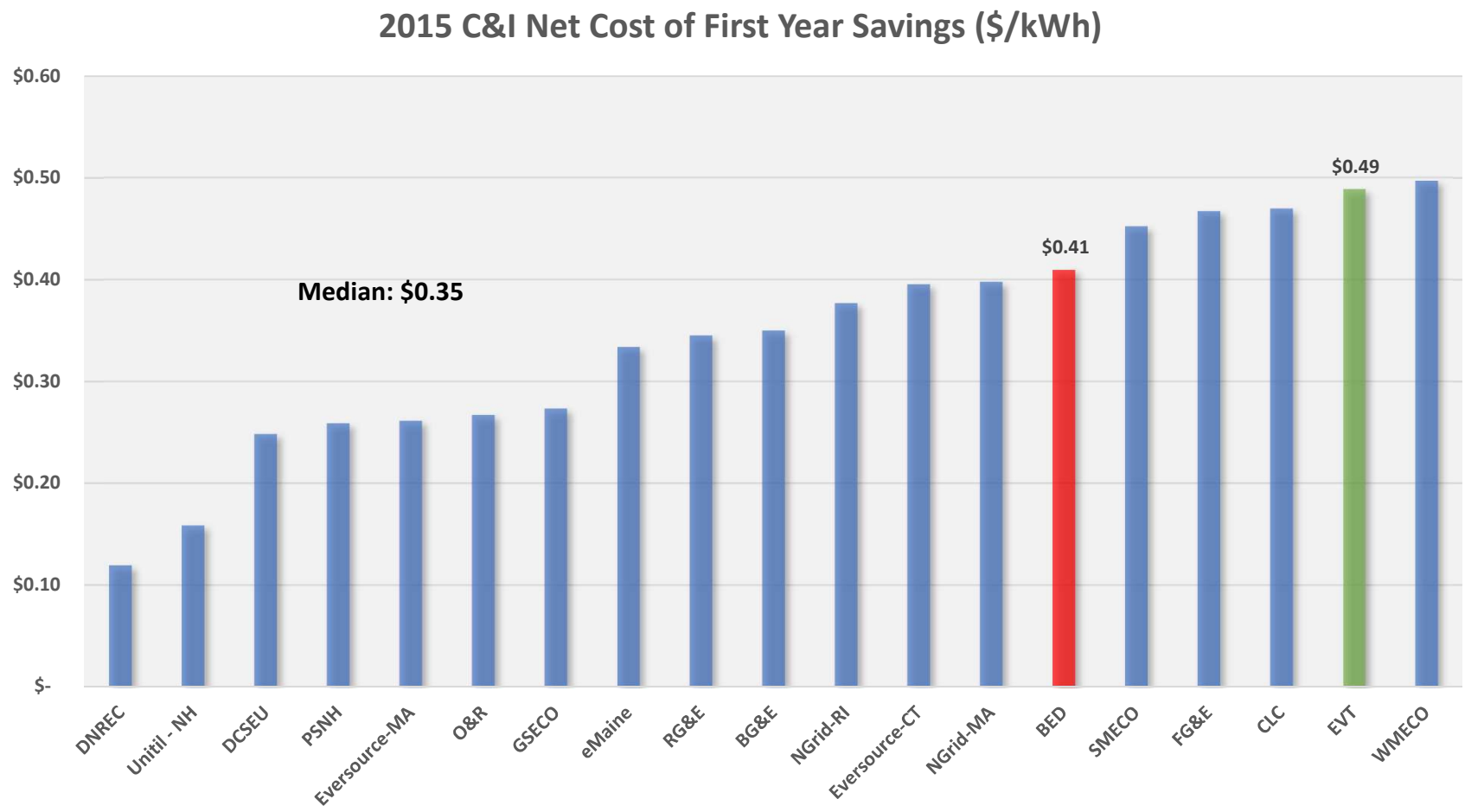
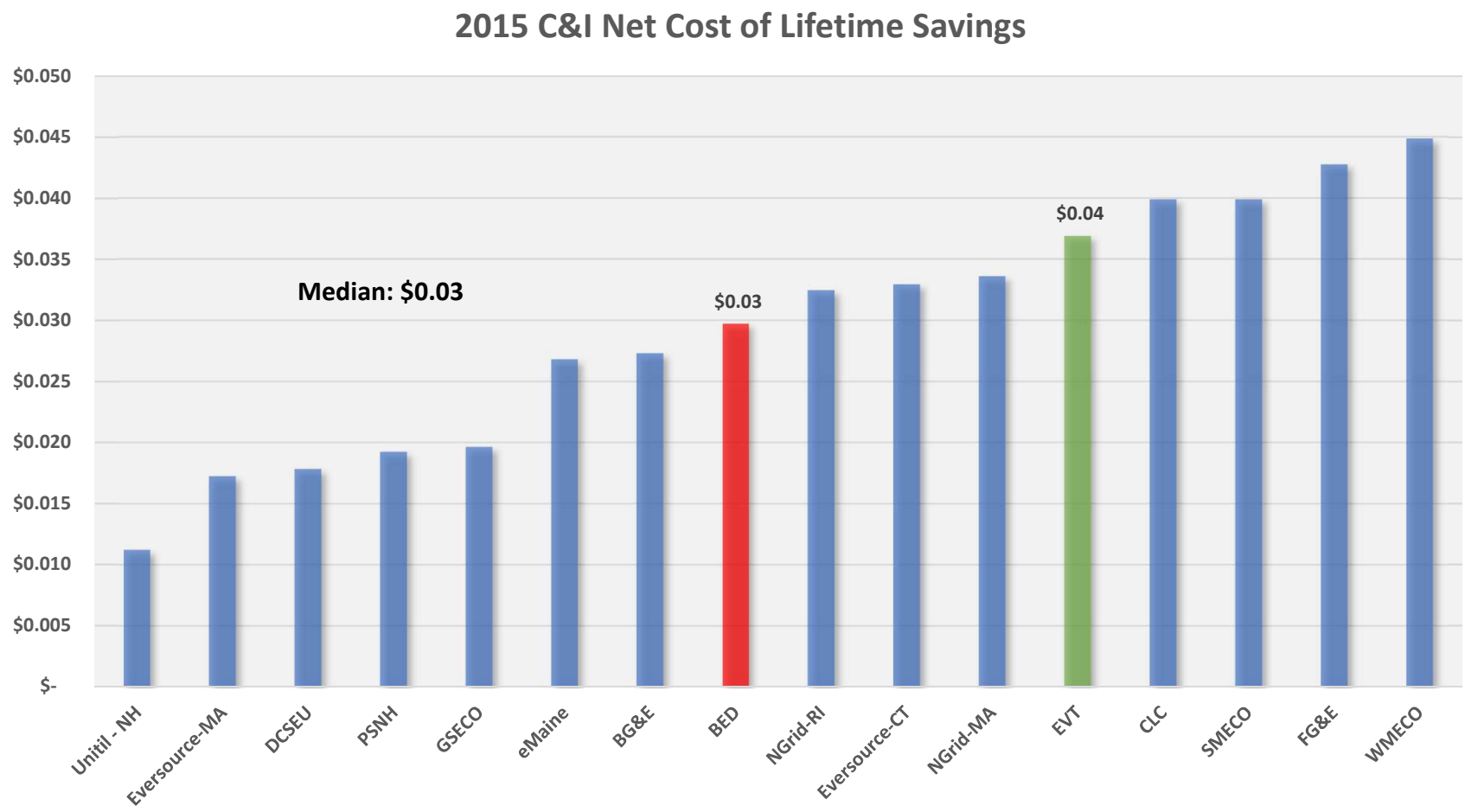
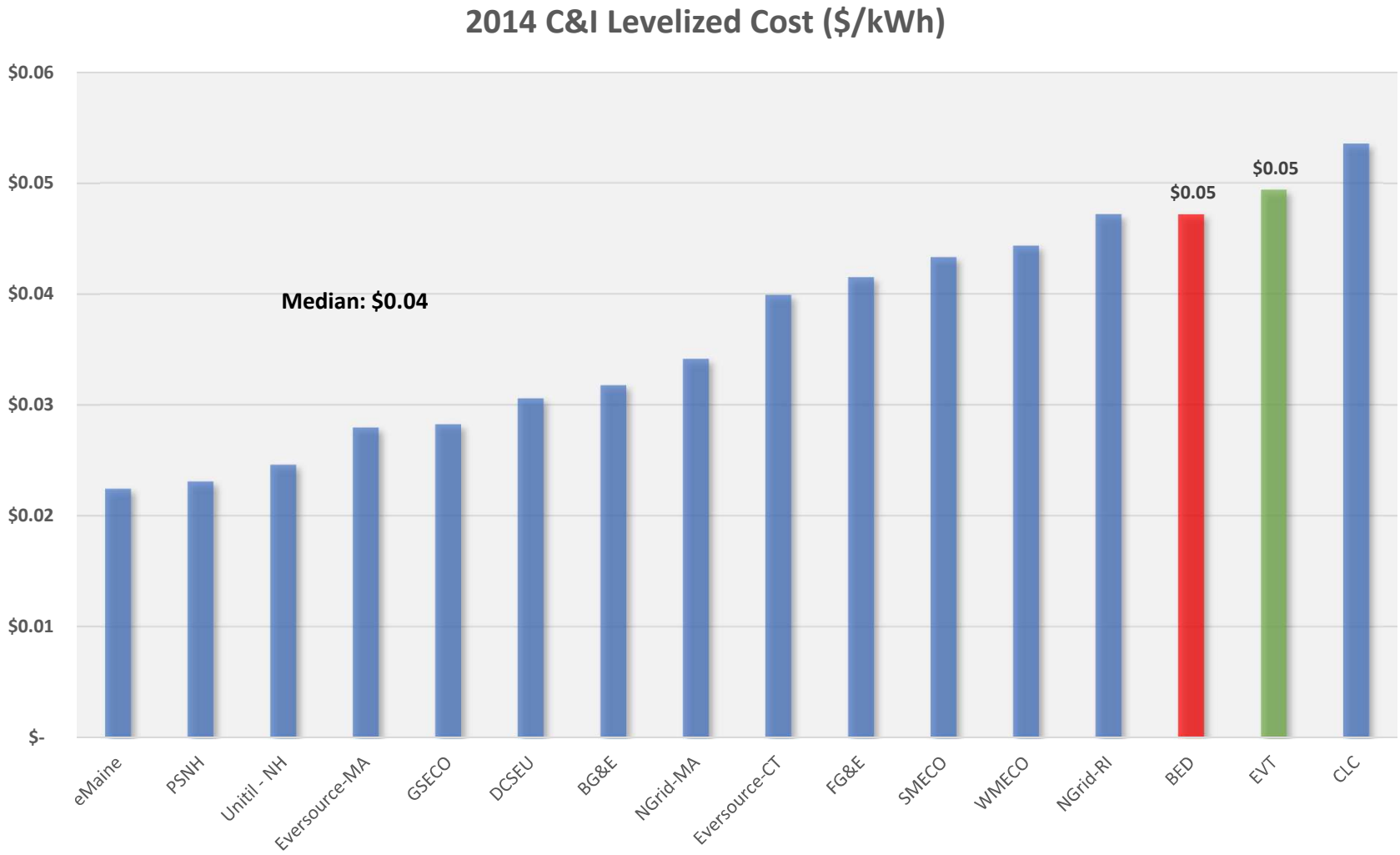
In 2015, EVT's and BED's first year C&I costs per kWh saved at $0.49/kWh and $0.41/kWh, respectively, were both above the median of $0.35/kWh.



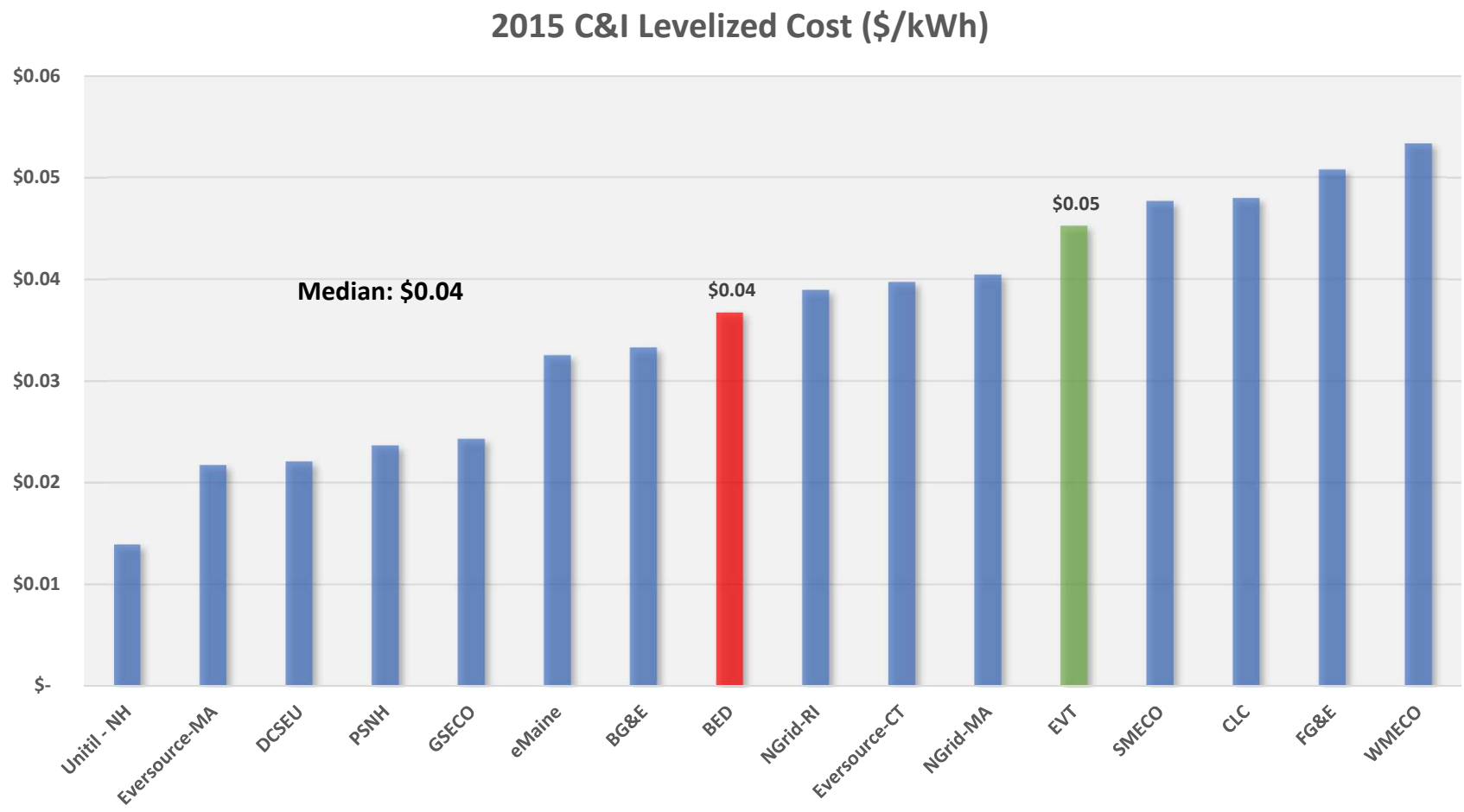
In 2015, EVT's C&I lifetime cost per kWh saved of $0.04/kWh was above the median of $0.03/kWh, while BED's was equal to the median value.



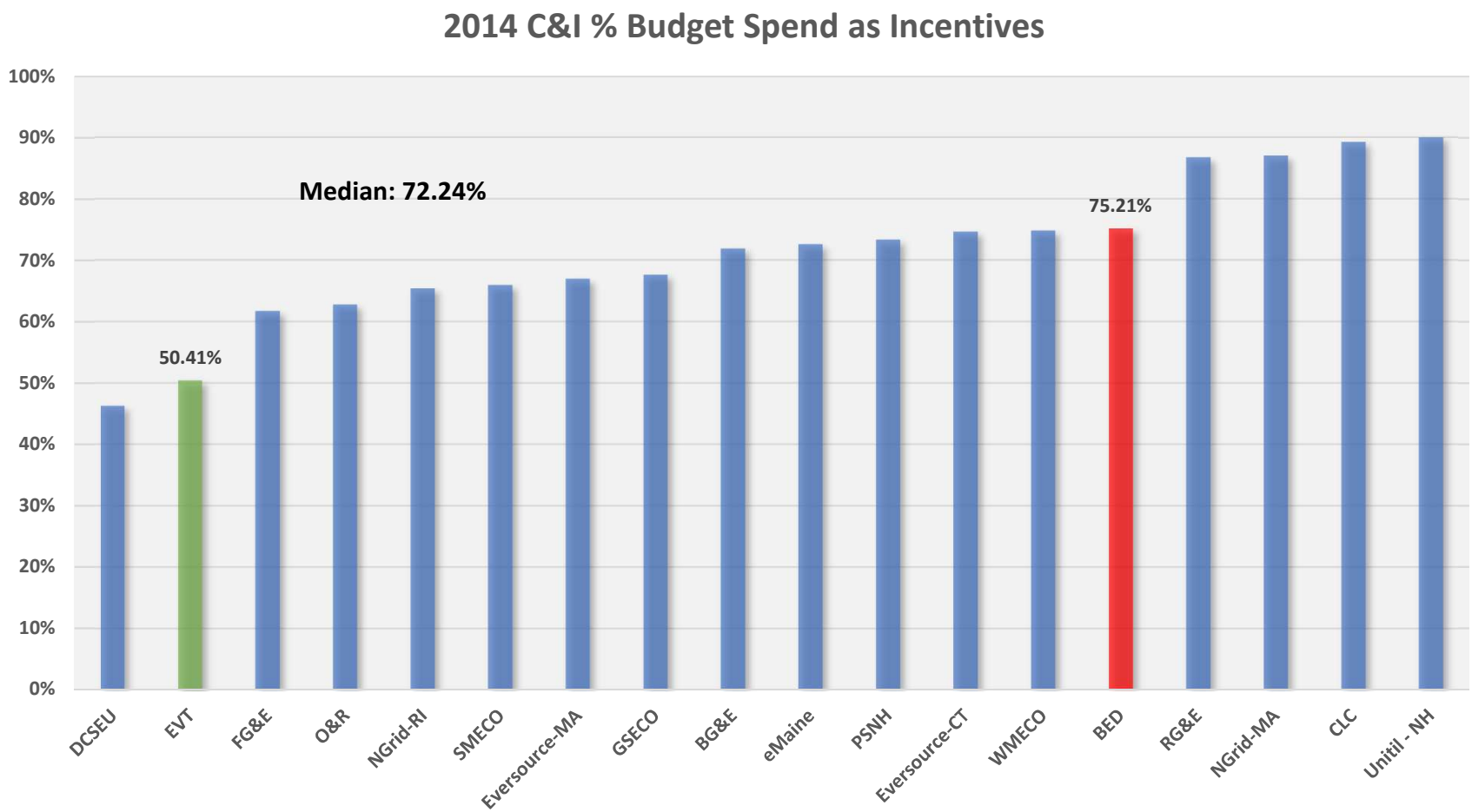
In 2014, EVT and BED had two of the highest C&I levelized costs per kWh saved at $0.05/kWh, compared to the median of $0.04/kWh.



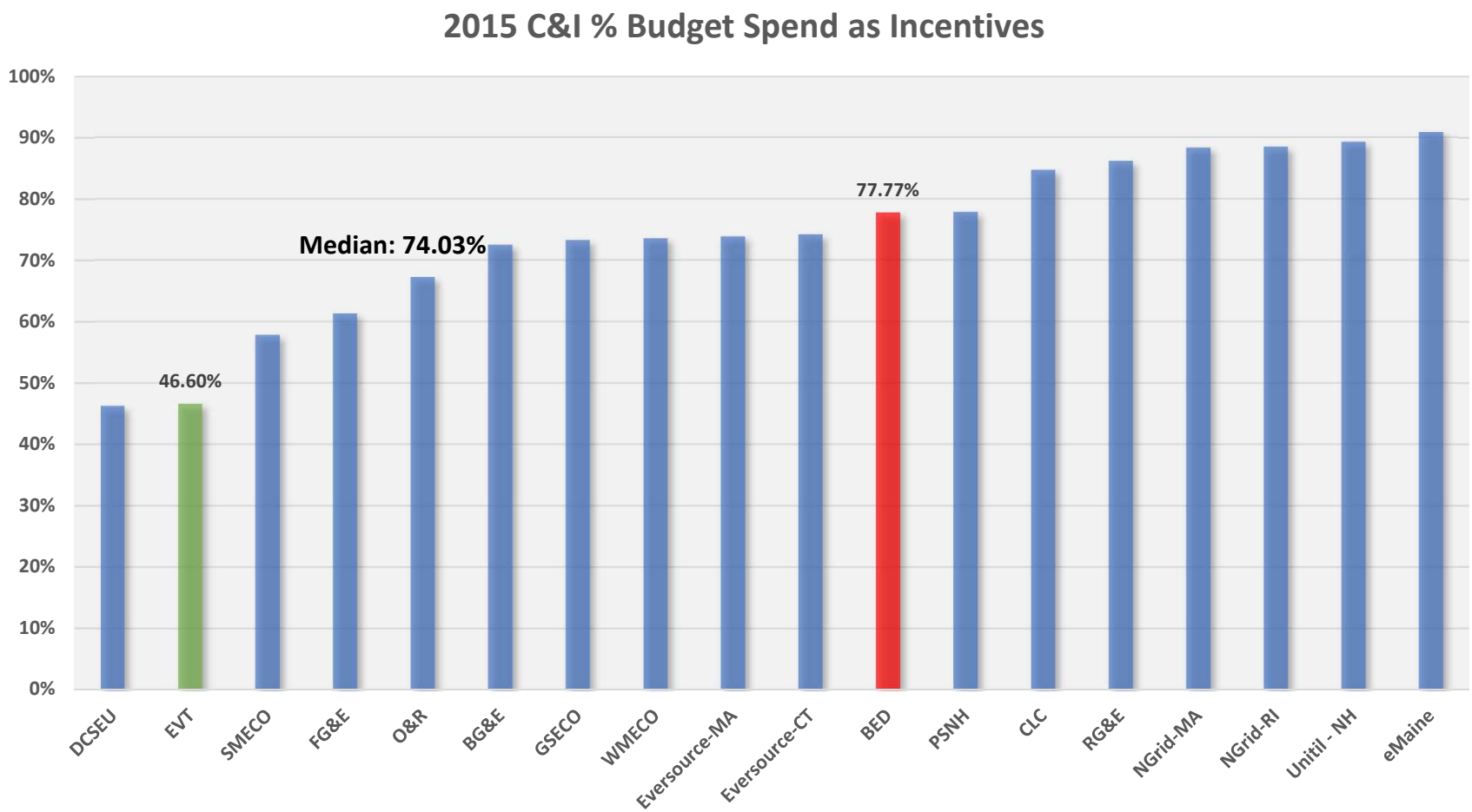
In 2015, EVT's C&I levelized cost per kWh saved of $0.05/kWh was above the median of $0.04, while BED's was equal to the median value at $0.04.



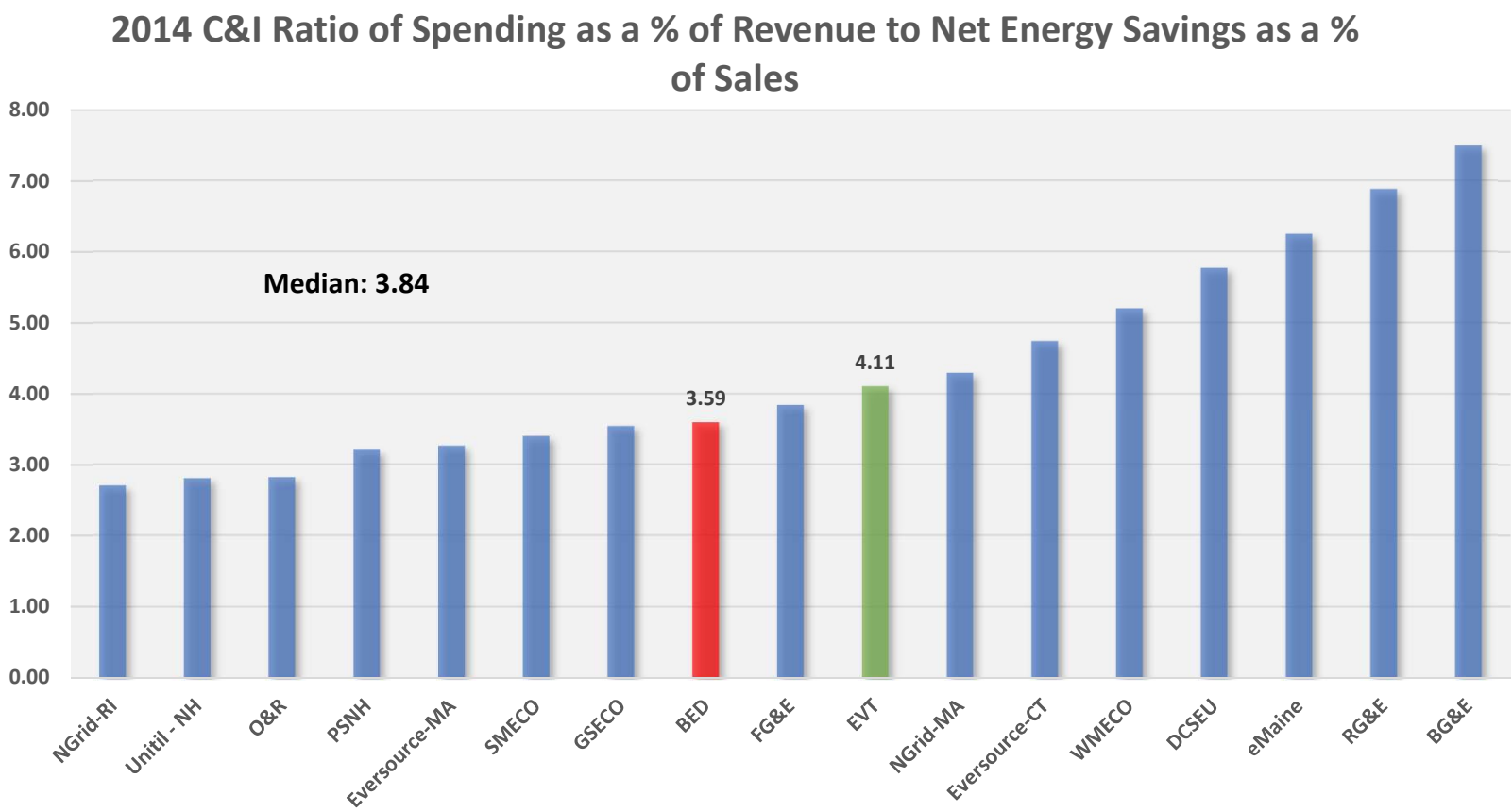
In 2014, EVT spent 50.41% of its C&I efficiency budget on incentives, below the group median of 72.24%, while BED's incentive spending at 75.21% was above the median.



In 2015, EVT spent 46.60% of its C&I efficiency budget on incentives, below the group median of 74.03%, while BED's incentive spending at 77.77% was above the median.



In 2014, at 4.11 EVT had higher than the median value of 4.20 for their C&I ratios of spending as a percent of revenues to net annual savings as a percent of sales, while BED was below the median at 3.59.



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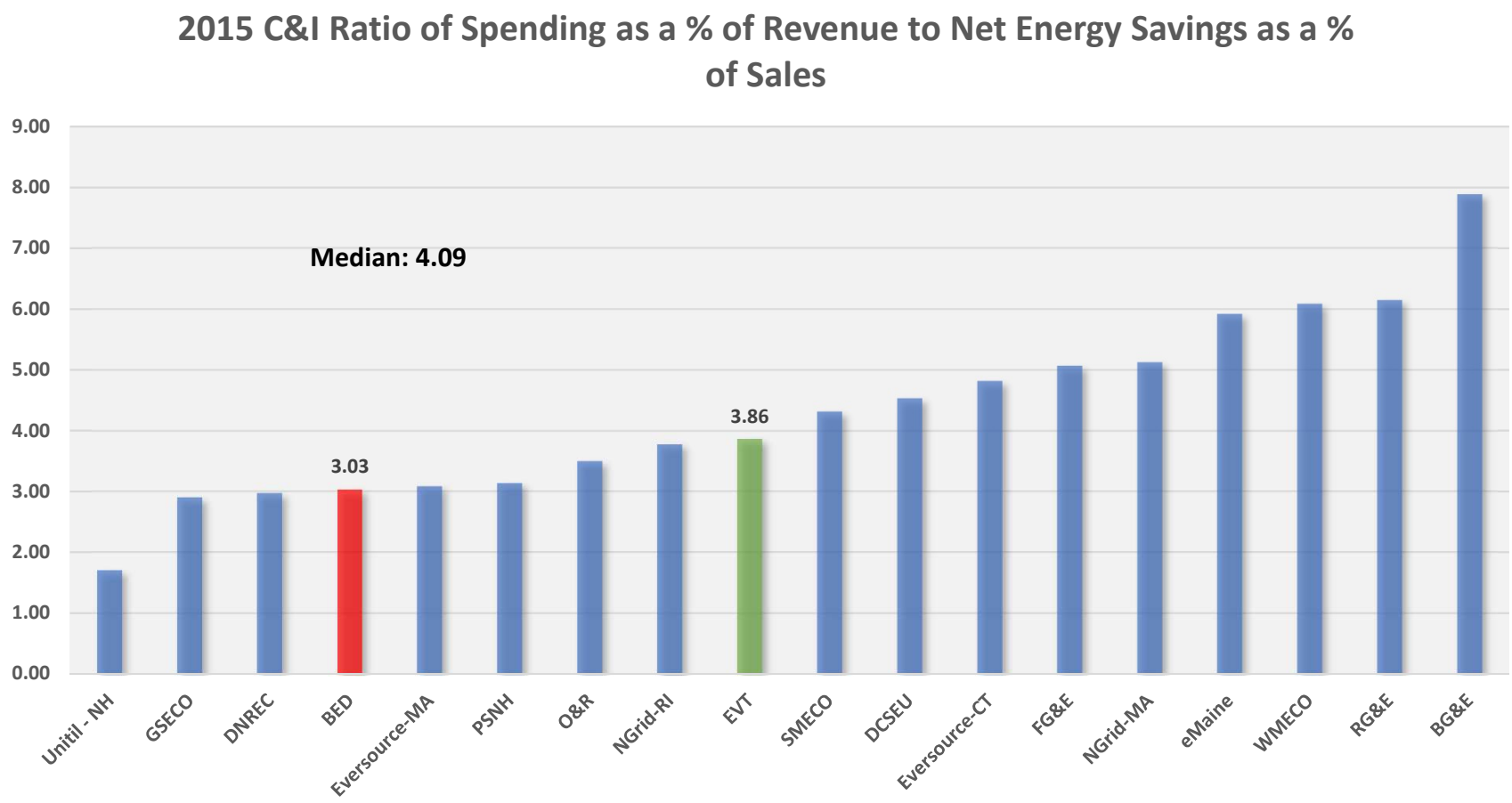
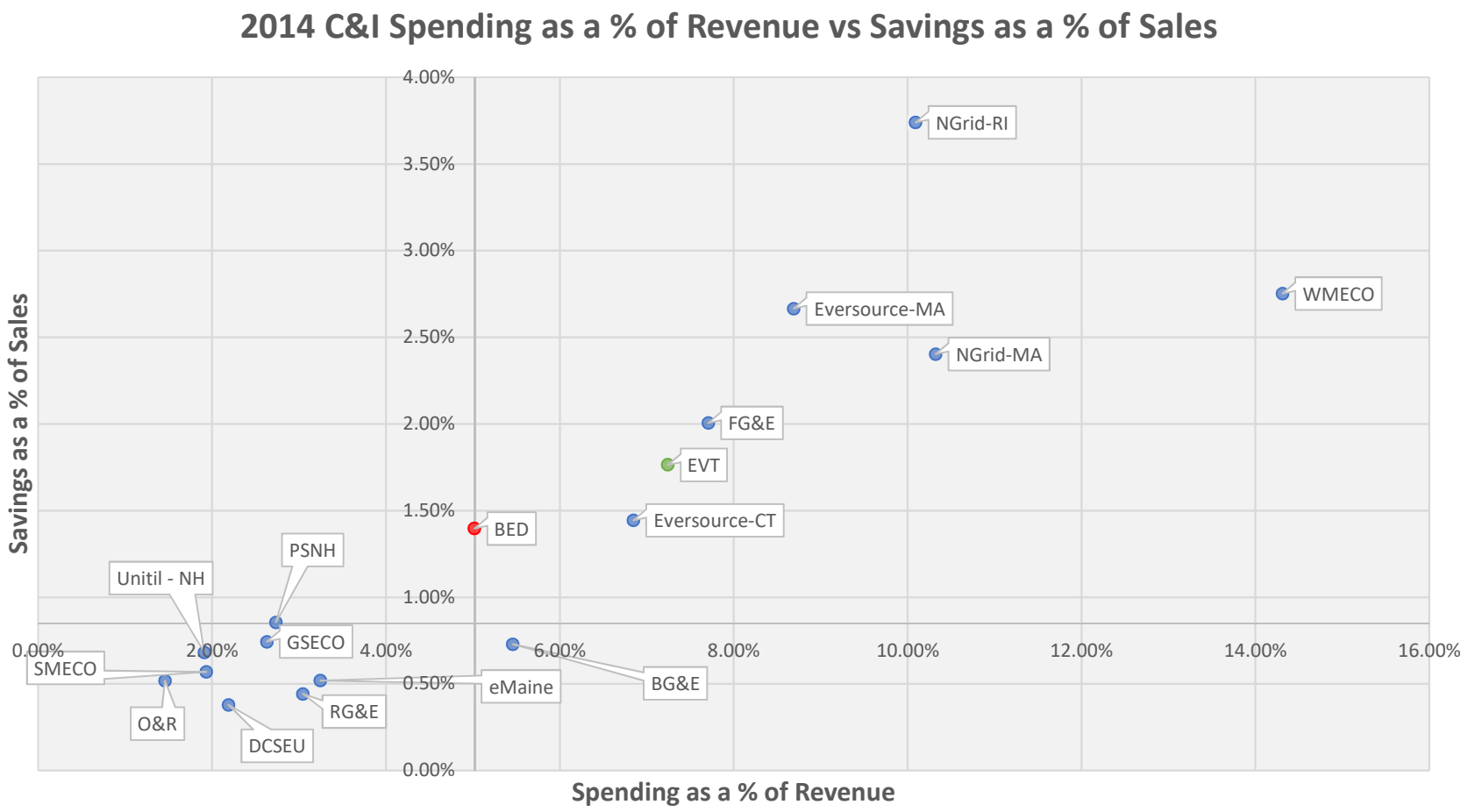
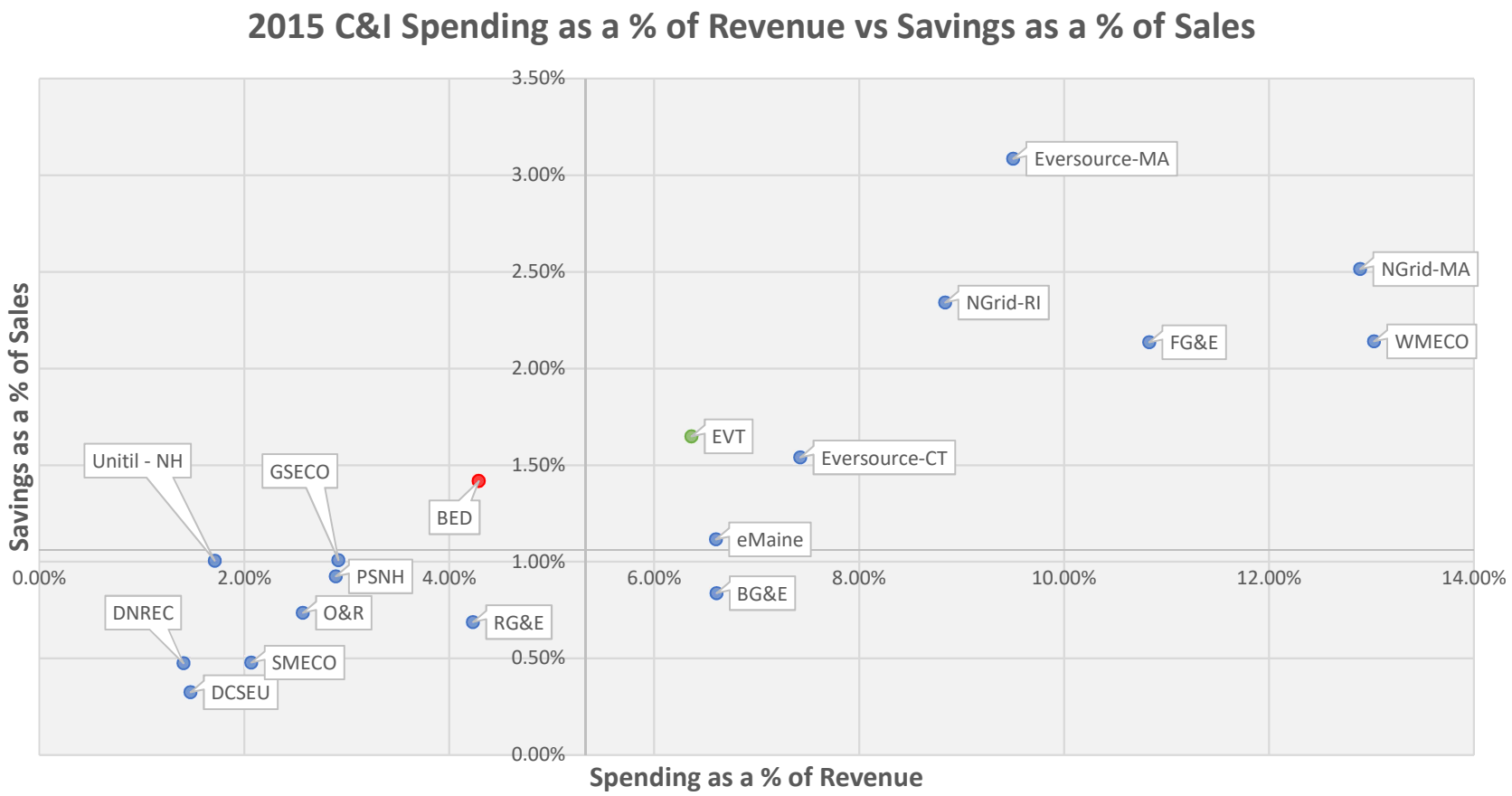
In 2014, at 3.86 and 3.03, respectively, both EVT and BED had lower than the median value of 4.09 for their C&I ratios of spending as a percent of revenues to net annual savings as a percent of sales.



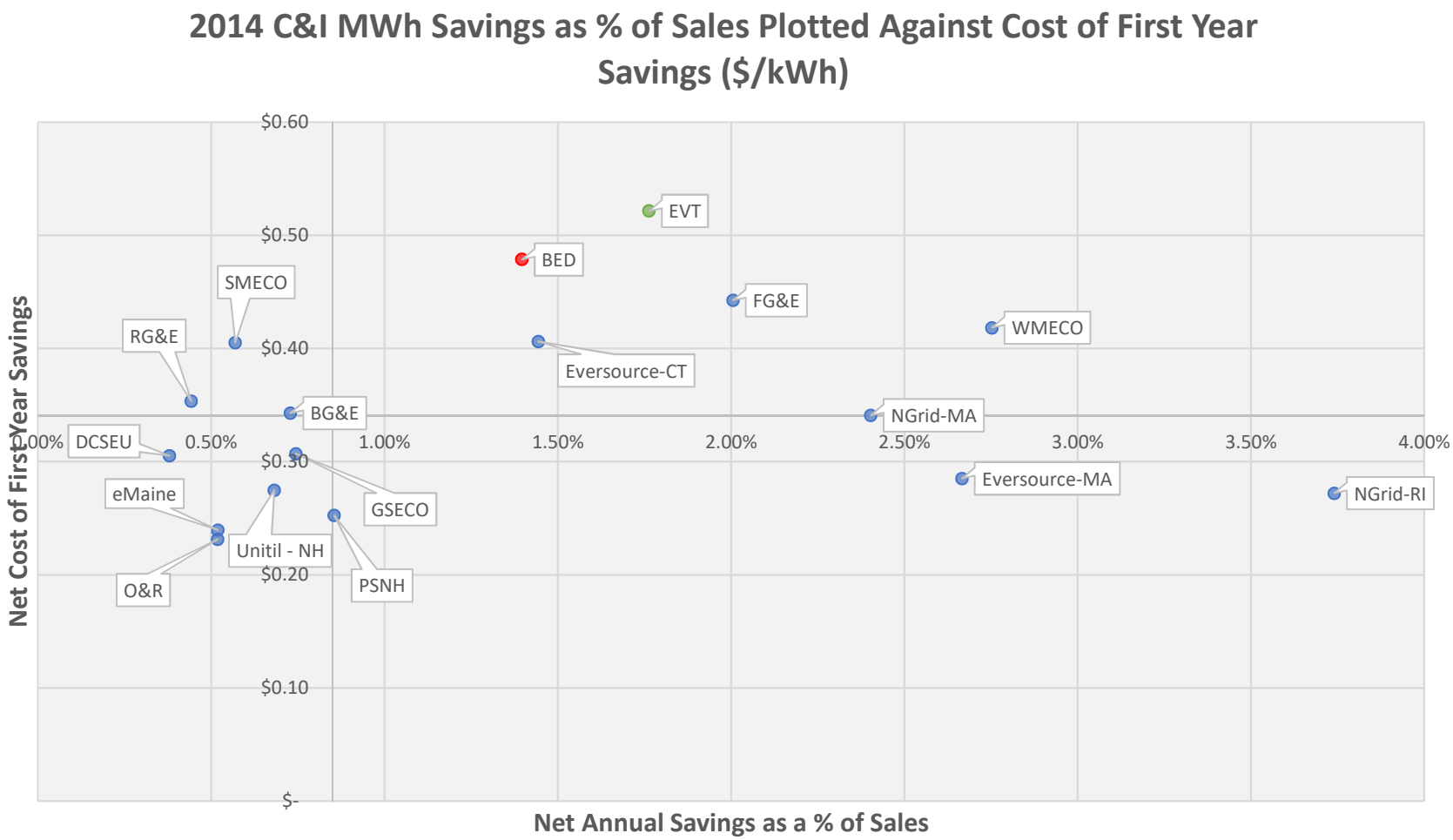
In 2014, EVT's C&I spending as a percent of revenue and savings as a percent of sales were both above the median. BED's C&I savings as a percent of sales was above the median, while its spending was at the median.



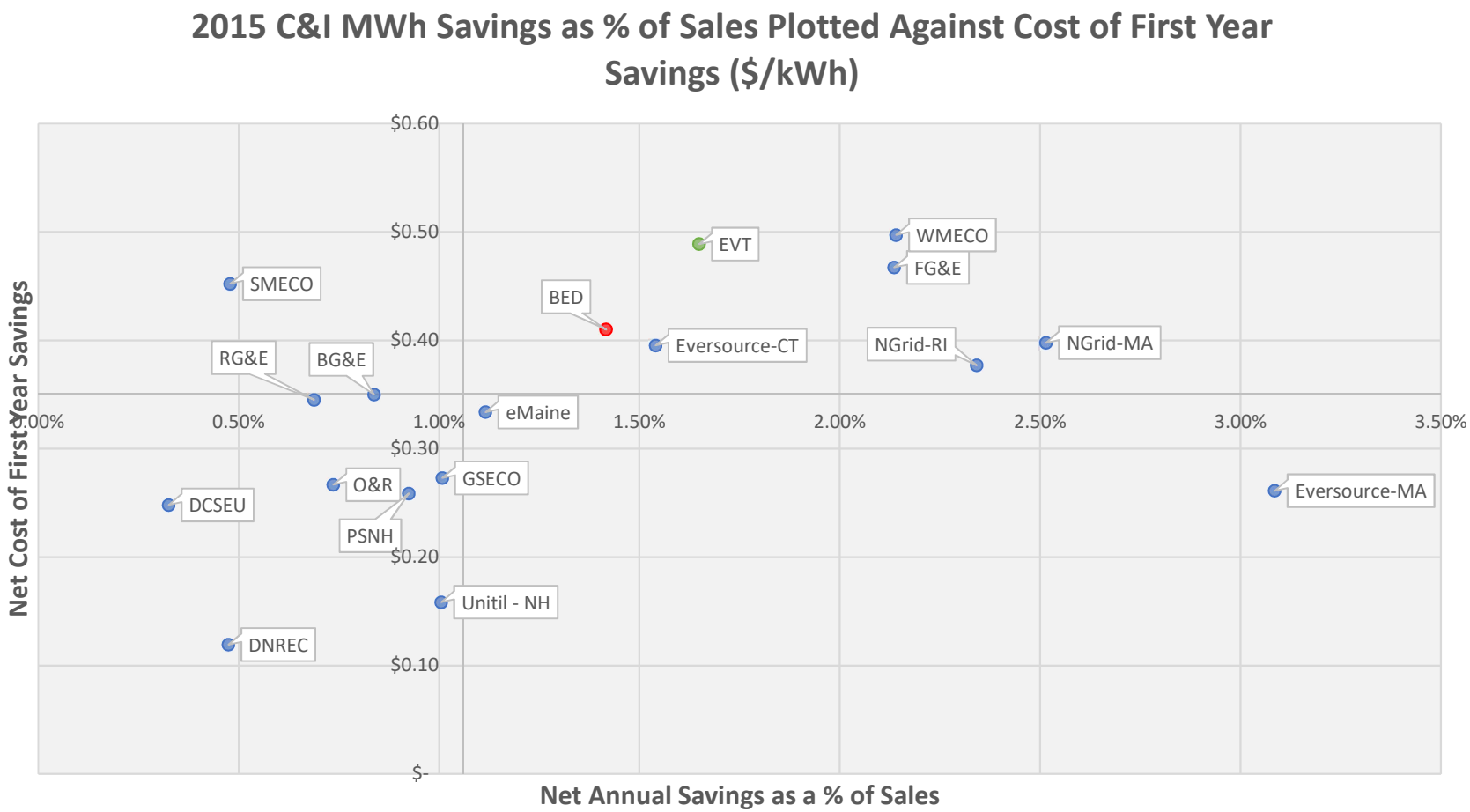
In 2015, EVT's C&I spending as a percent of revenue and savings as a percent of sales were both above the median. BED's C&I savings as a percent of sales was above the median, while its spending was below the median.



In 2014, both EVT and BED had higher then median C&I savings as a percent of revenue and higher net cost of first year savings.



In 2015, both EVT and BED had higher then median C&I savings as a percent of revenue and higher net cost of first year savings.



Section 4:
2014 and 2015 Electric Residential Benchmarking Results

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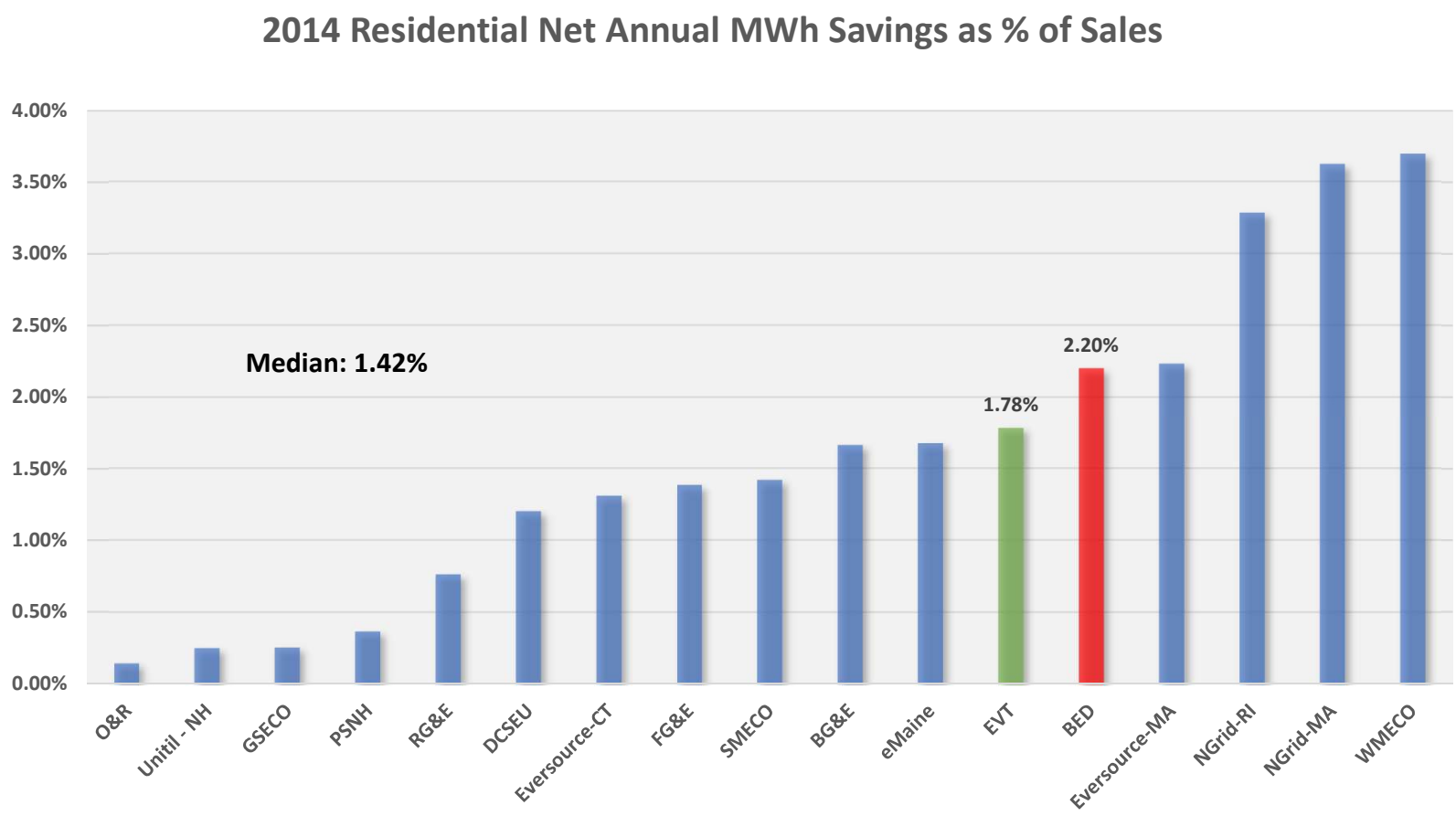
Section 4: 2014 Electric Residential Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	4.1%	1.4%	$0.16	$0.43	$0.06	$0.06
EVT	5.2%	1.8%	$0.18	$0.51	$0.06	$0.05
BED	6.4%	2.2%	$0.16	$0.45	$0.05	$0.04

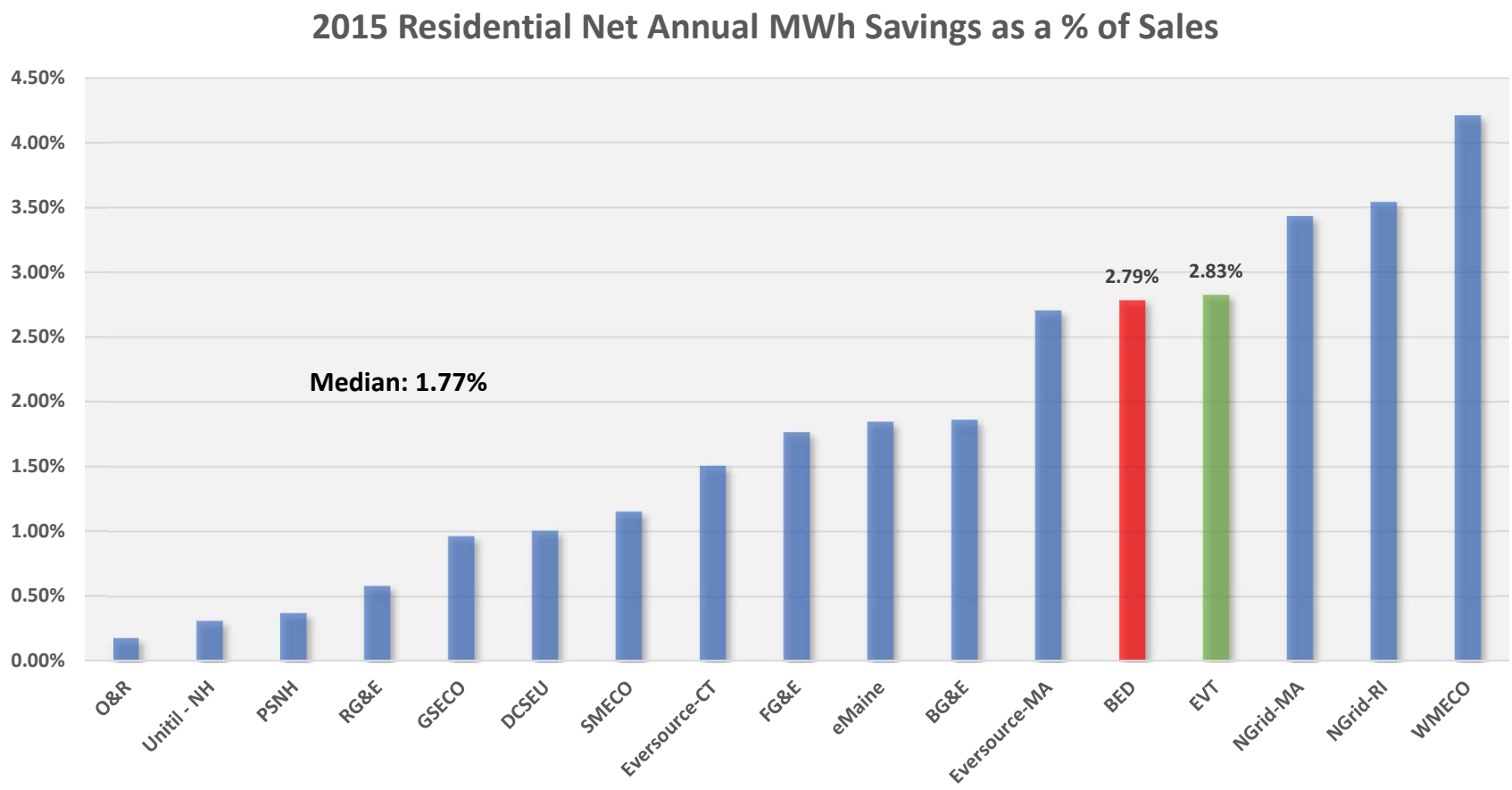
Section 4: 2015 Electric Residential Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/kWh	Cost of First Year Savings $/kWh	Levelized Cost of Energy Savings $/kWh	Cost of Lifetime Savings $/kWh
All Benchmarked Median	3.6%	1.8%	$0.16	$0.41	$0.05	$0.05
EVT	6.9%	2.8%	$0.17	$0.42	$0.04	$0.03
BED	7.3%	2.8%	$0.16	$0.41	$0.04	$0.03

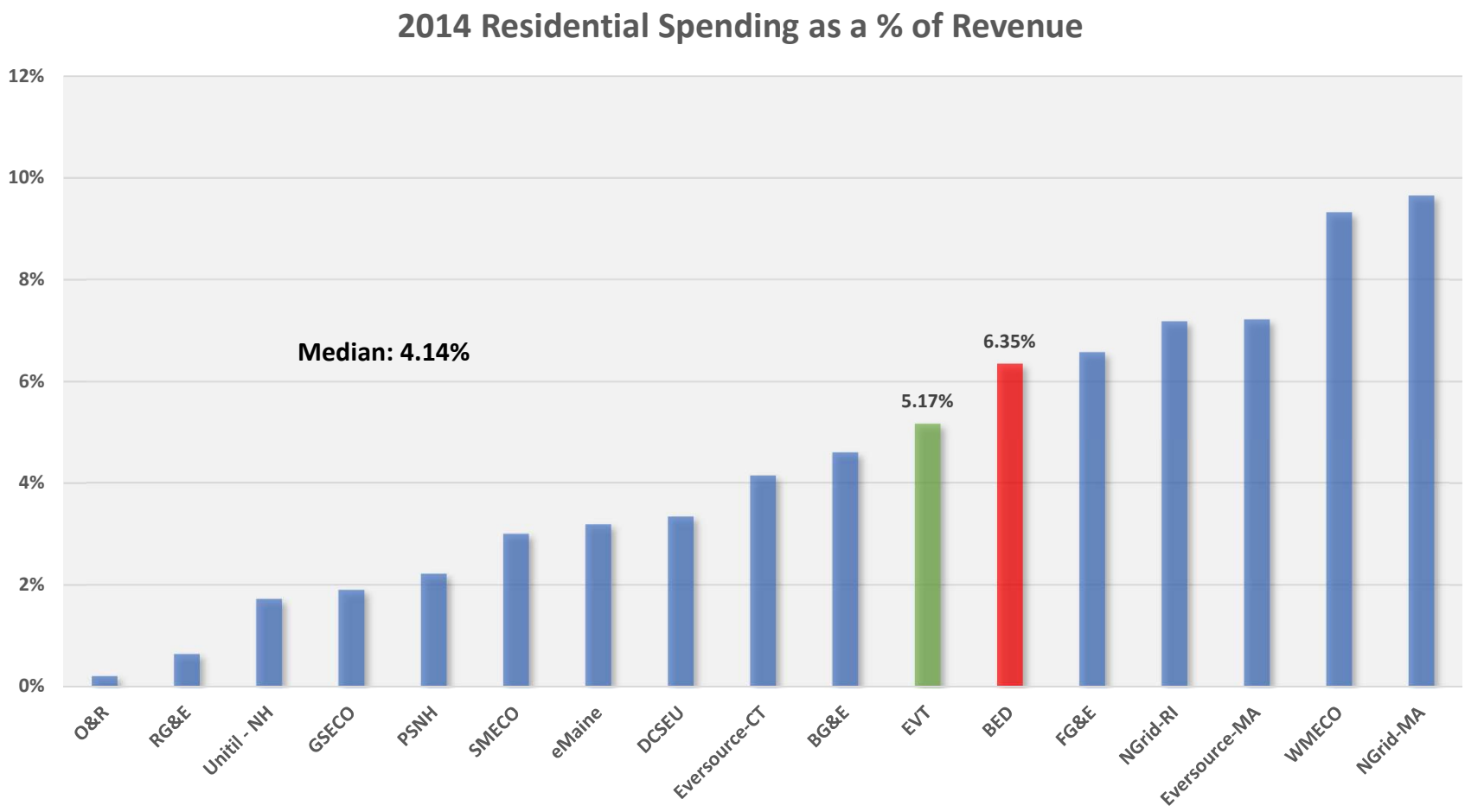
In 2014, both EVT and BED's Residential sector net annual savings as a percentage of sales were above the median of 1.42% at 1.78% and 2.20%, respectively.



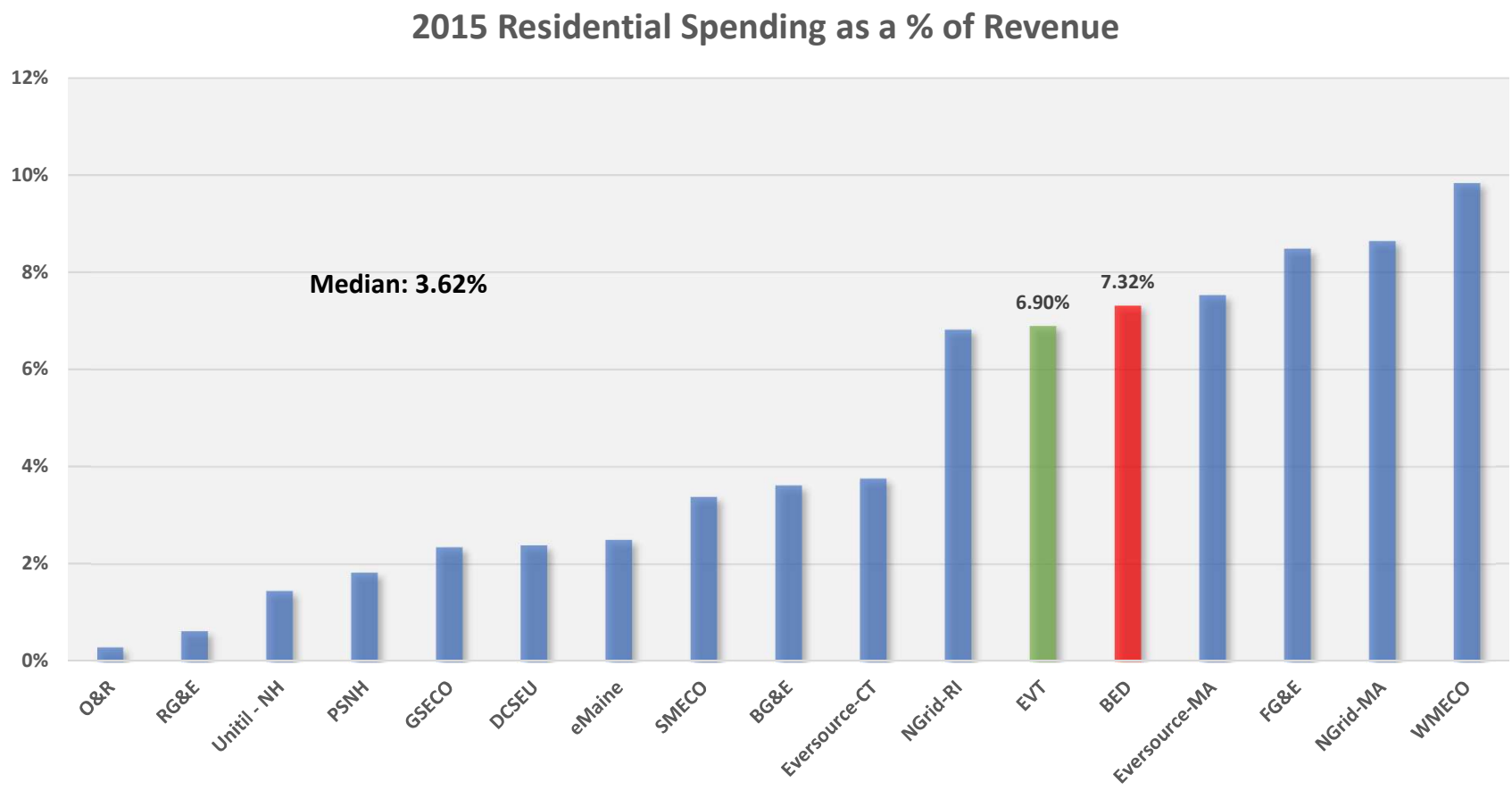
In 2015 EVT's and BED's Residential net annual MWh savings as a percent of sales were 2.83% and 2.79%, respectively, above the median of 1.77%.



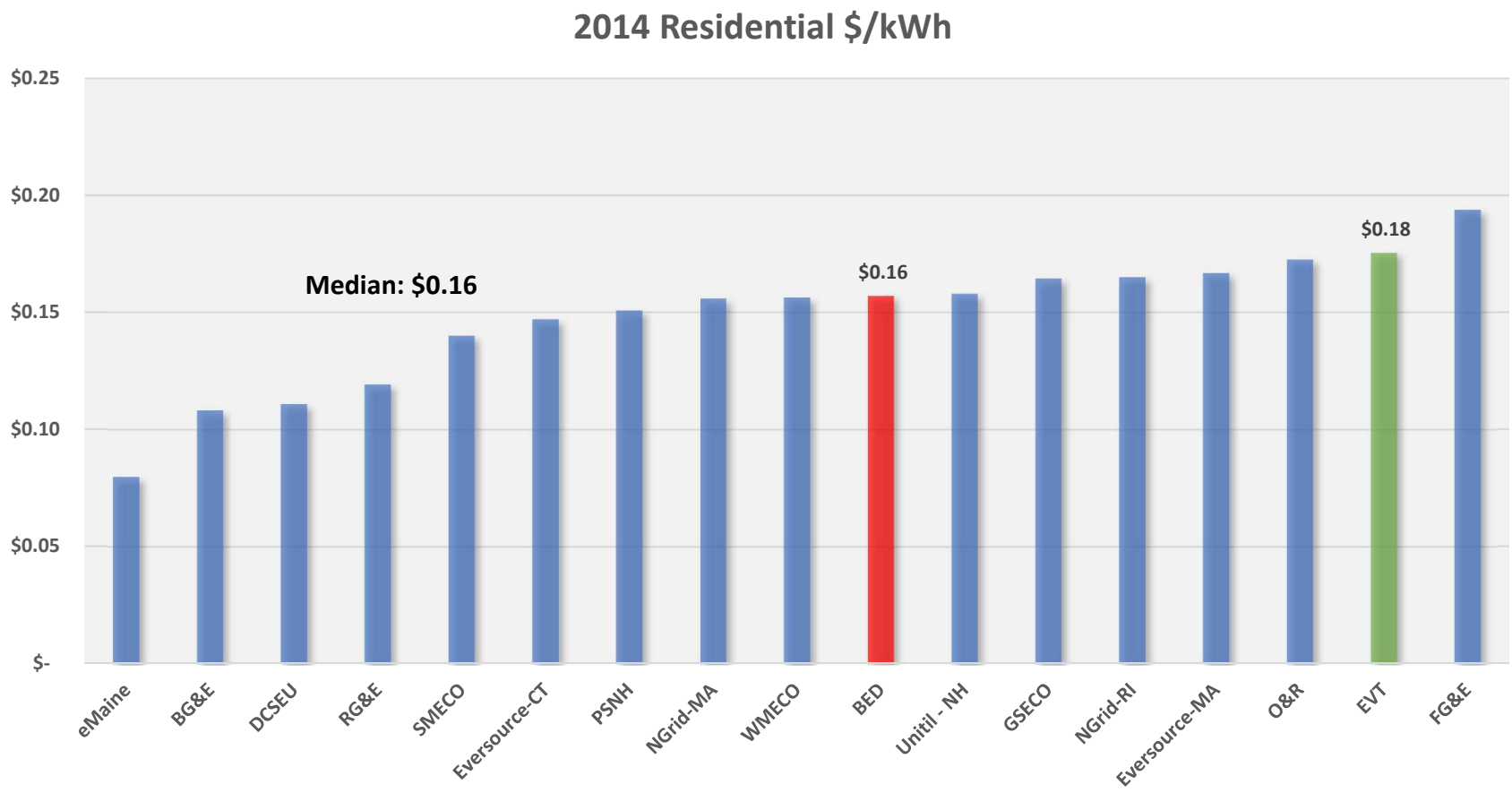
In 2014 EVT's Residential spending was 5.17% of Residential revenue and BED's was 6.35%, both above the median of 4.14%.



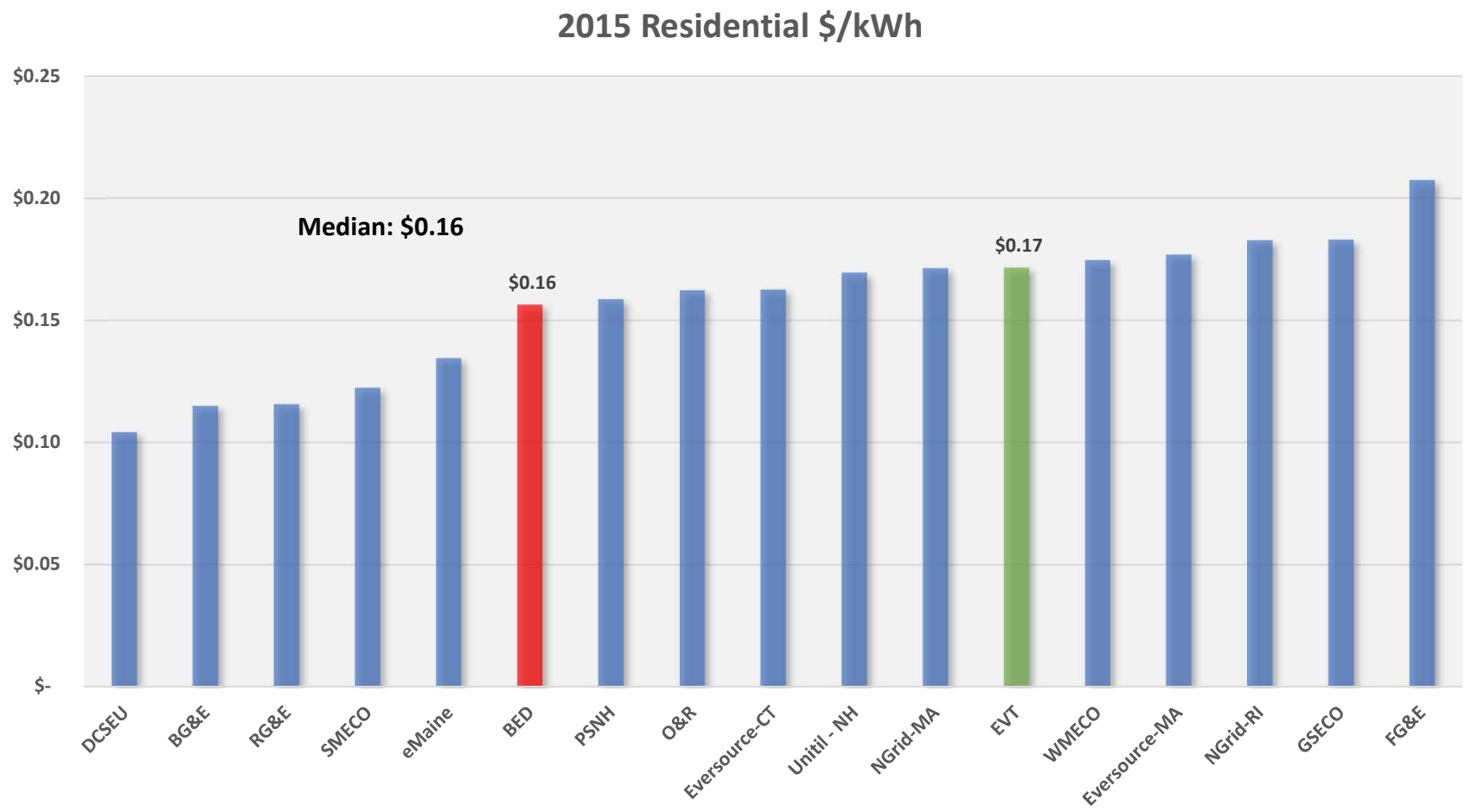
Similarly, in 2015 EVT's Residential spending was 6.90% of Residential revenue and BED's was 7.32%, both above the median of 3.62%.



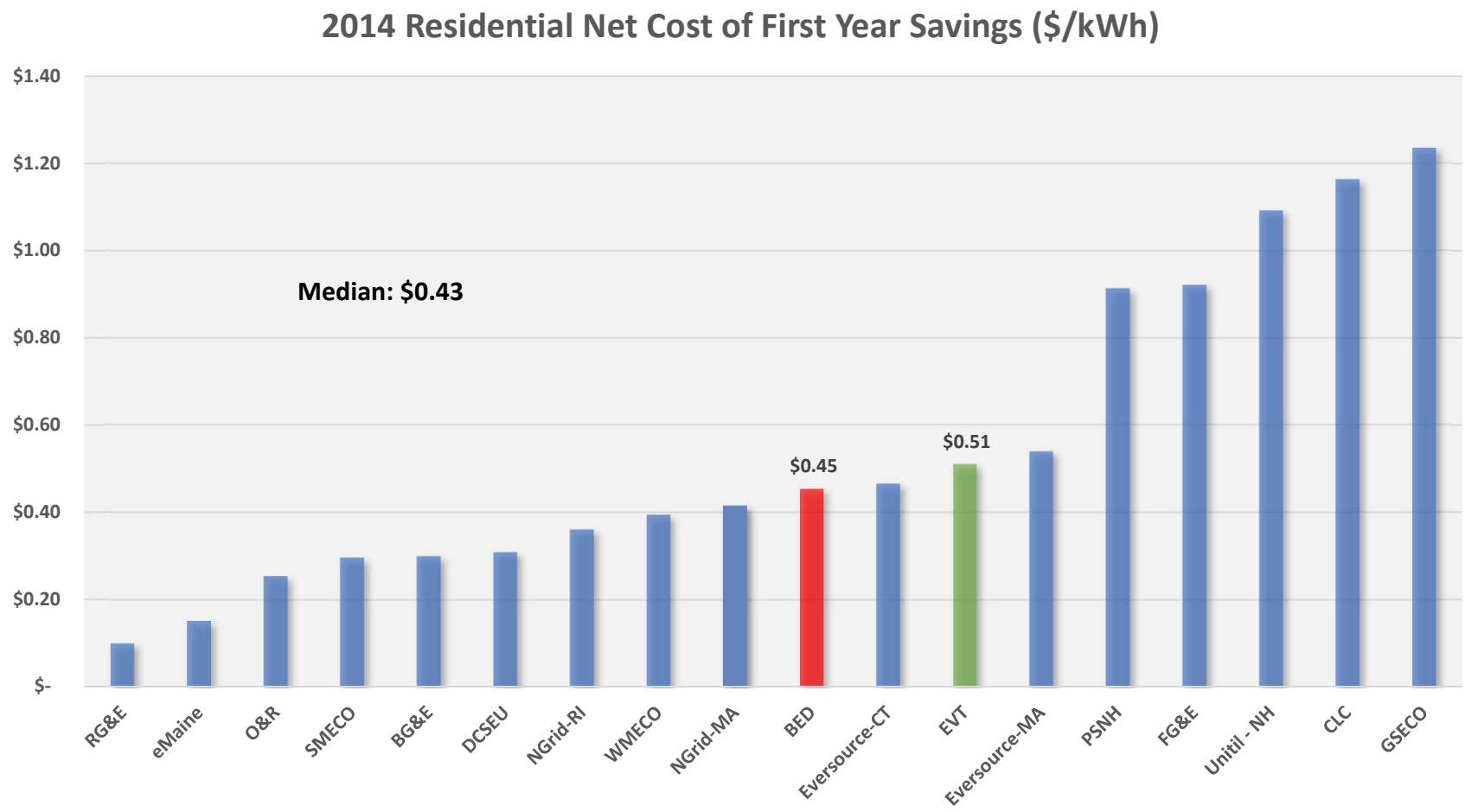
In 2014, EVT had above median Residential retail rates at $0.18/kWh compared to the median of $0.16/kWh, while BED had retail rates equal to the median.



In 2015, EVT had above median Residential retail rates at $0.17/kWh, while BED's Residential retail rate at $0.16/kWh was equal to the median of $0.16/kWh.



In 2014, both EVT and BED had an above median cost per Residential first year kWh saved at $0.51/kWh and $0.45/kWh, respectively, compared to the median of $0.43/kWh.



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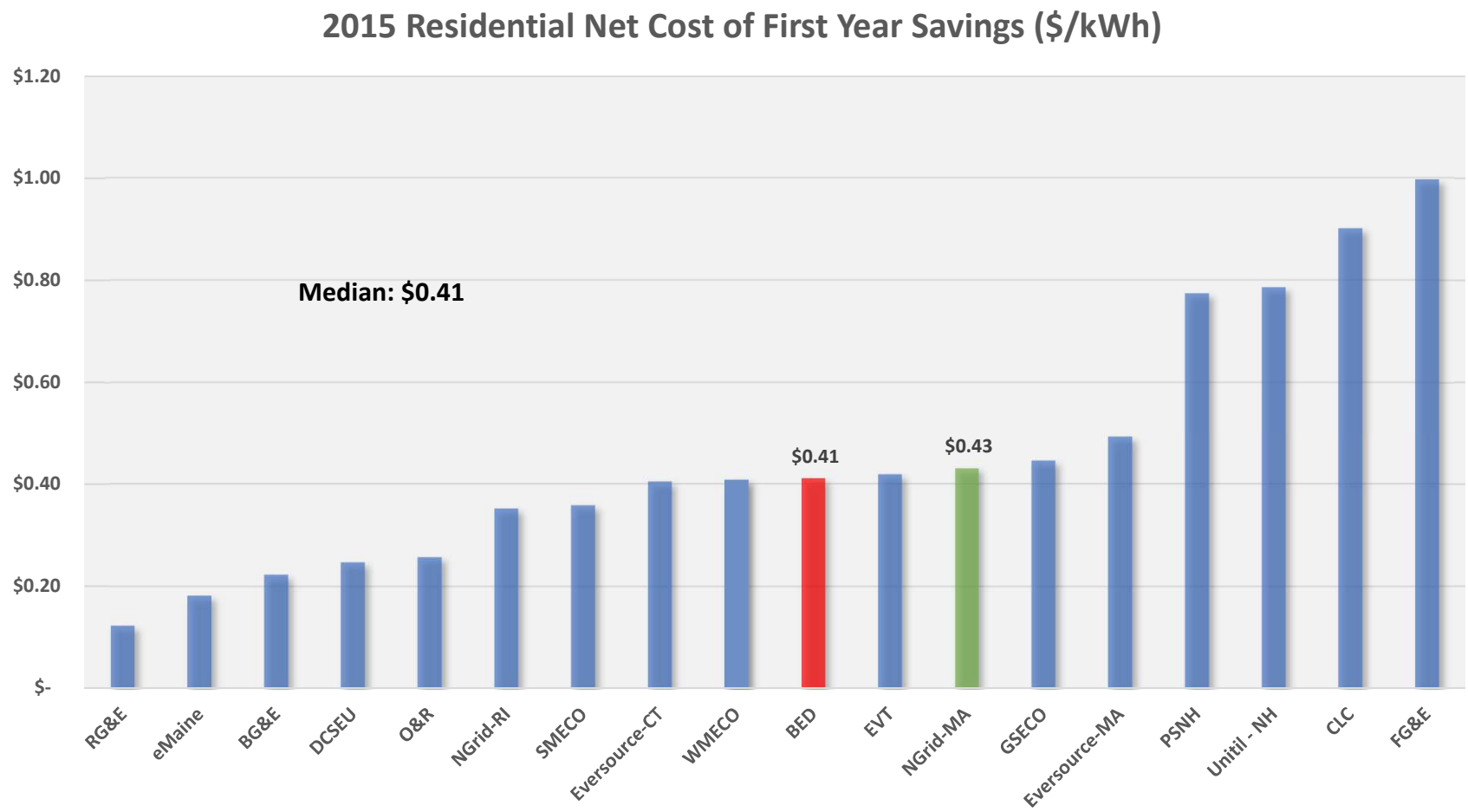
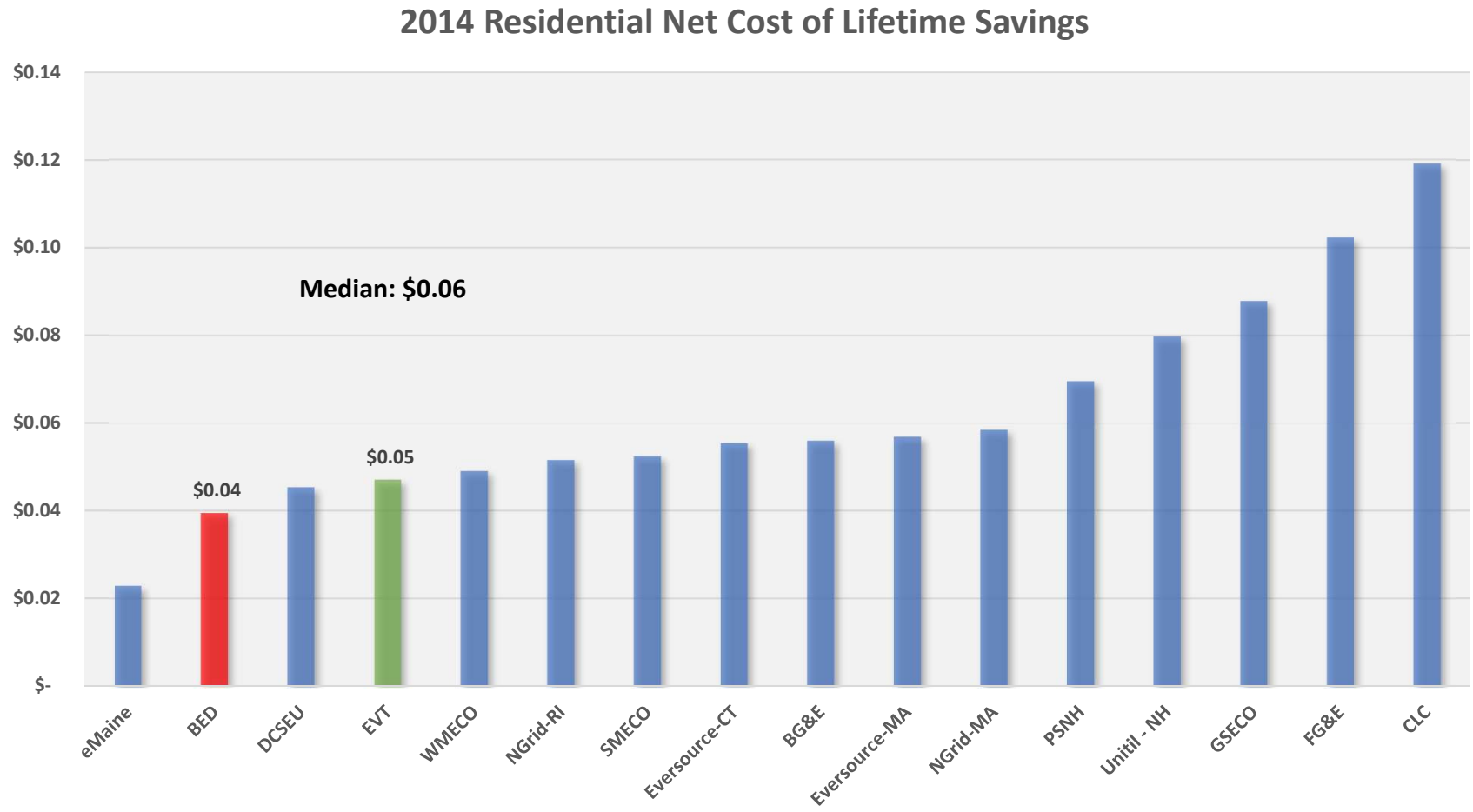
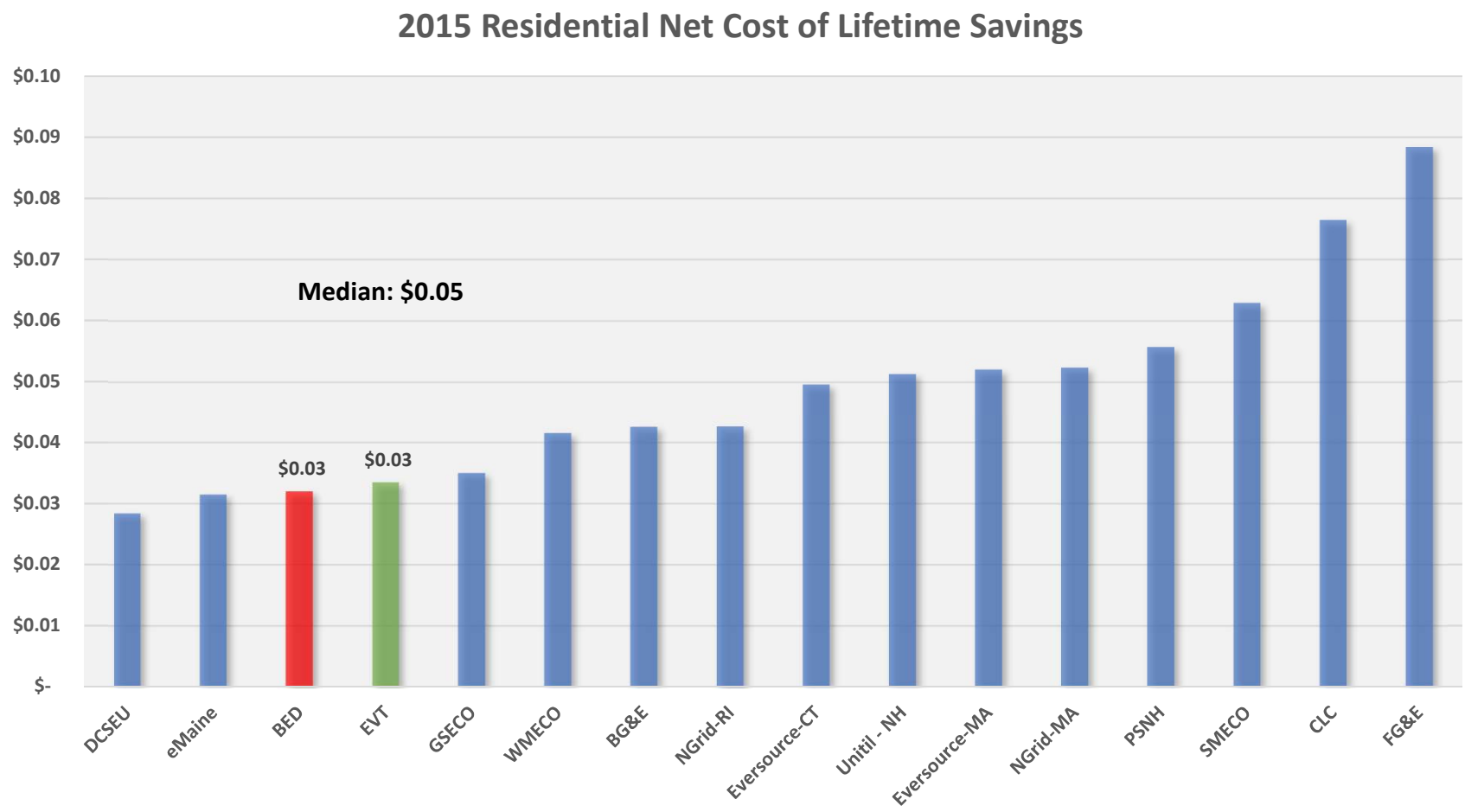
In 2015, EVT again had an above median cost per Residential first year kWh saved at $0.43/kWh, compared to the median of $0.41/kWh, while BED was equal to the median at $0.41.



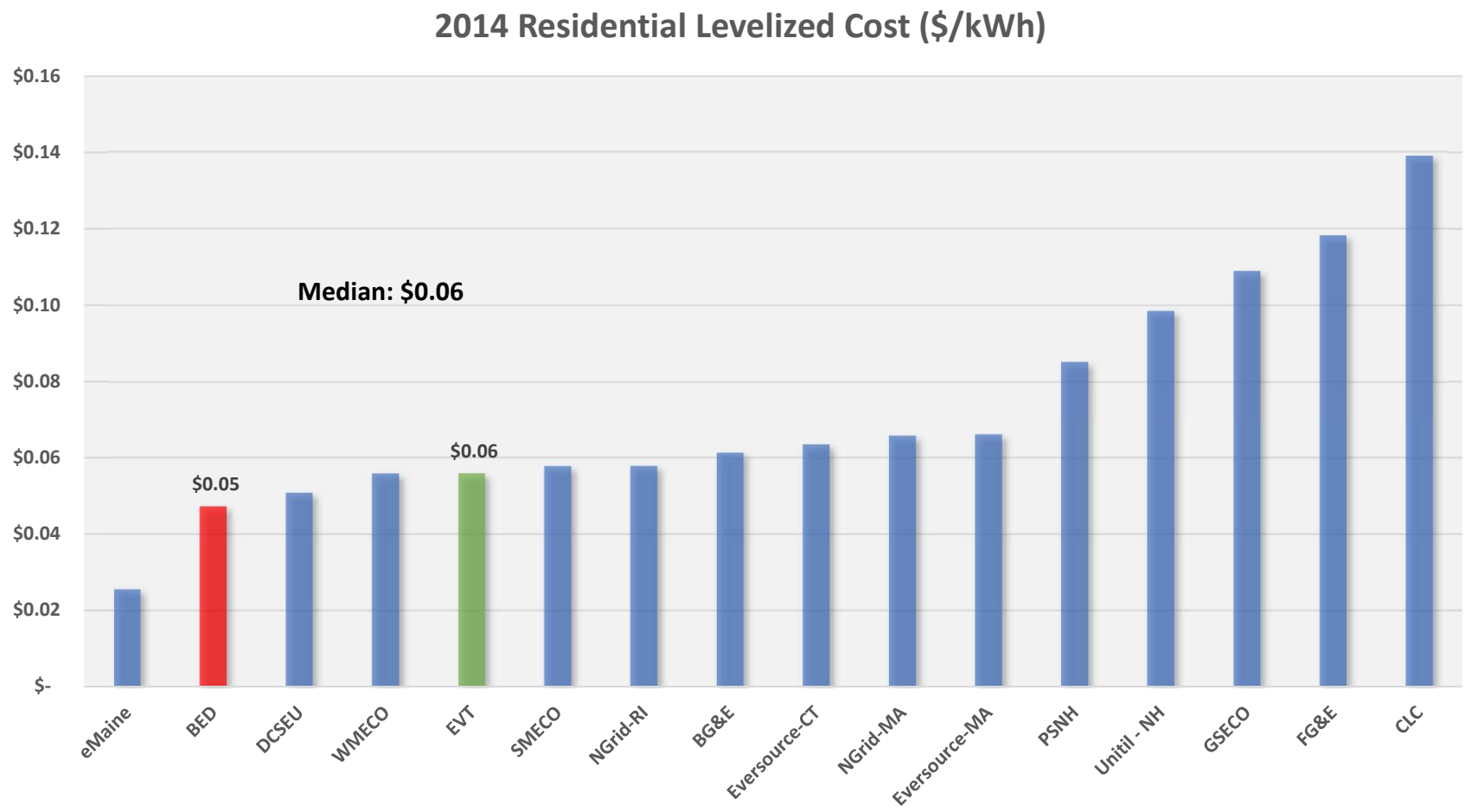
In 2014, EVT and BED's cost per Residential lifetime kWh saved were $0.05/kWh and $0.04/kWh, respectively, both below the median of $0.06/kWh.



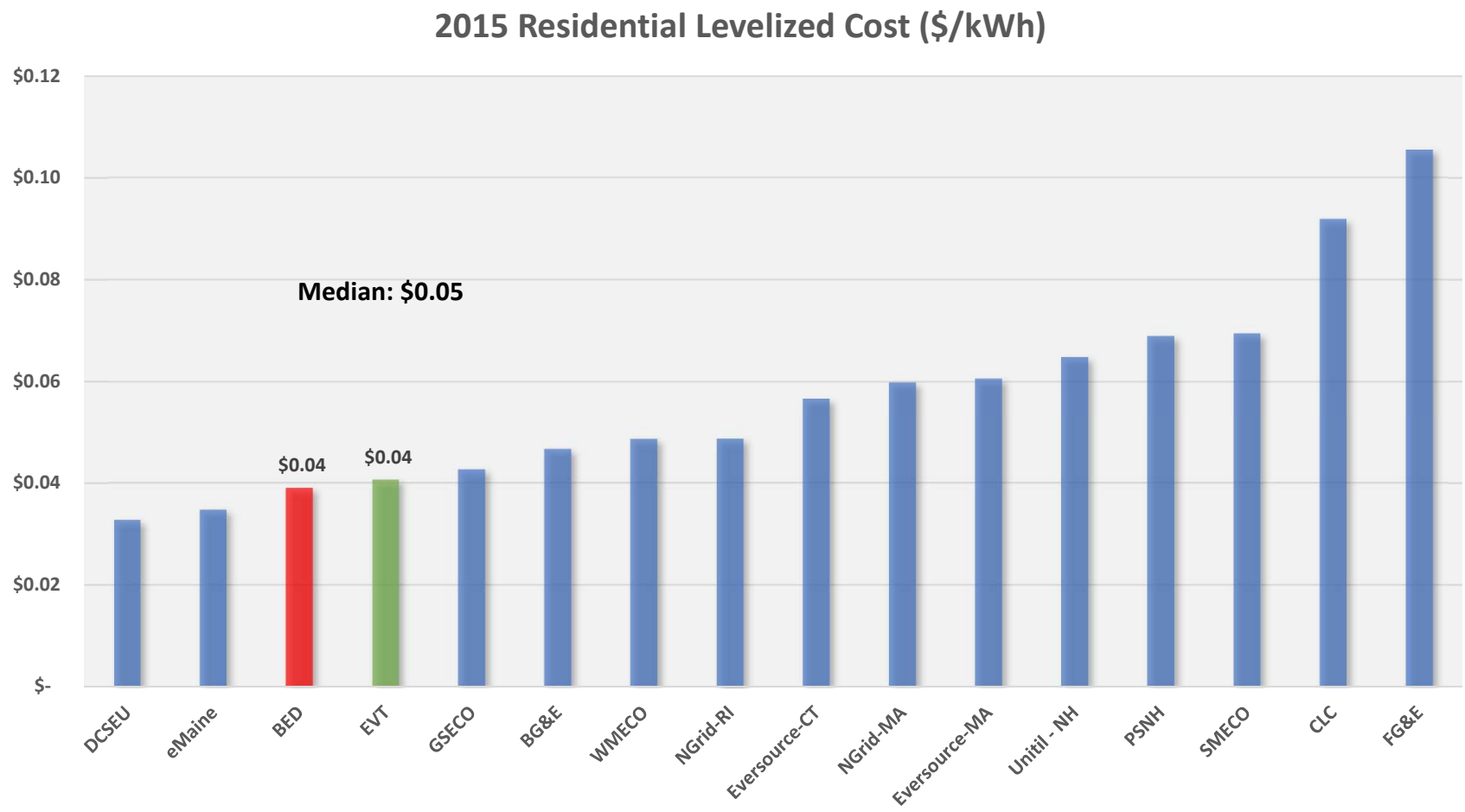
In 2015, EVT's and BED's cost per Residential lifetime kWh saved were both $0.03/kWh, below the median at $0.05/kWh.



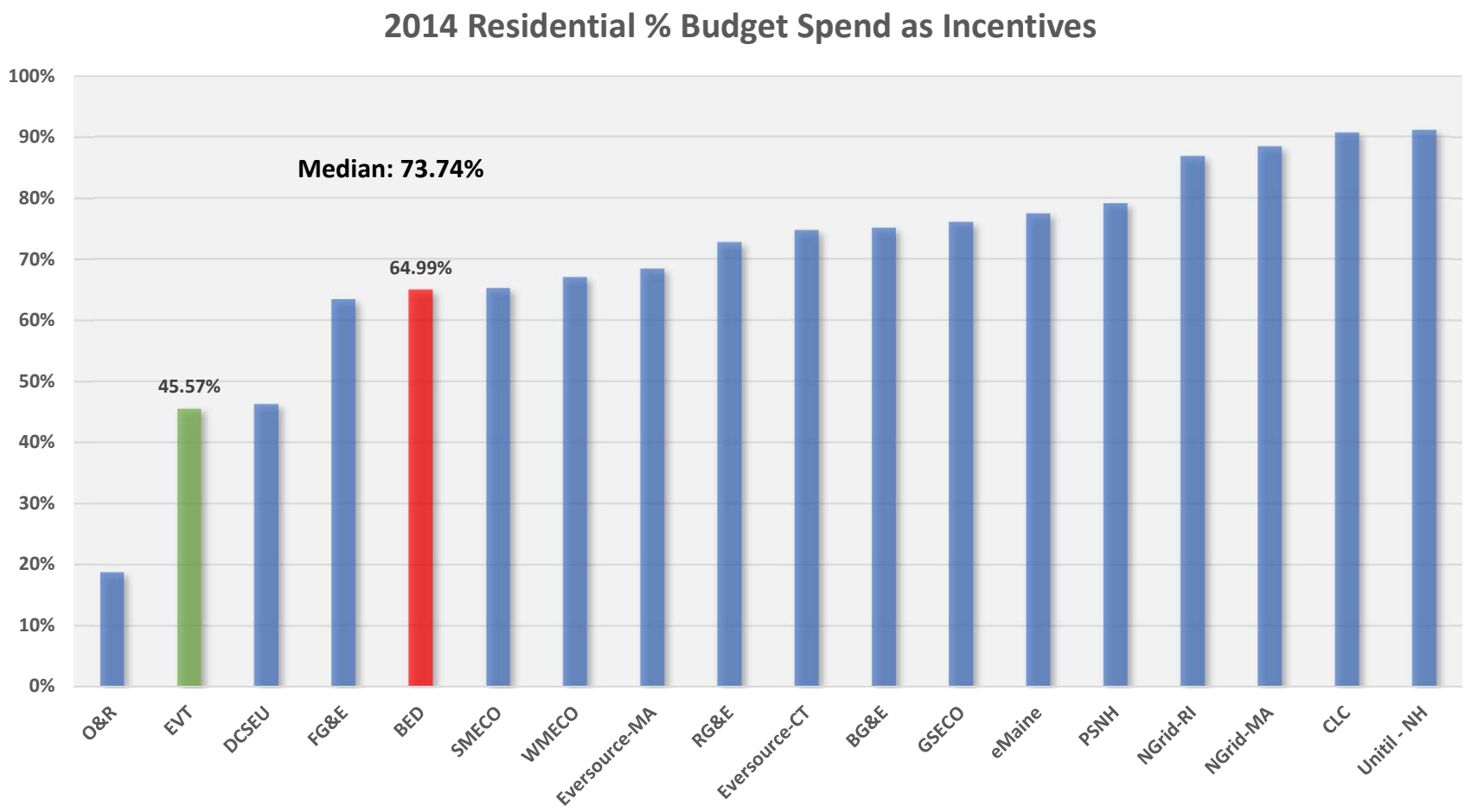
In 2014, EVT's cost per Residential levelized kWh saved was at the median value of $0.06/kWh, while BED's cost per levelized kWh was below the median at $0.06/kWh.



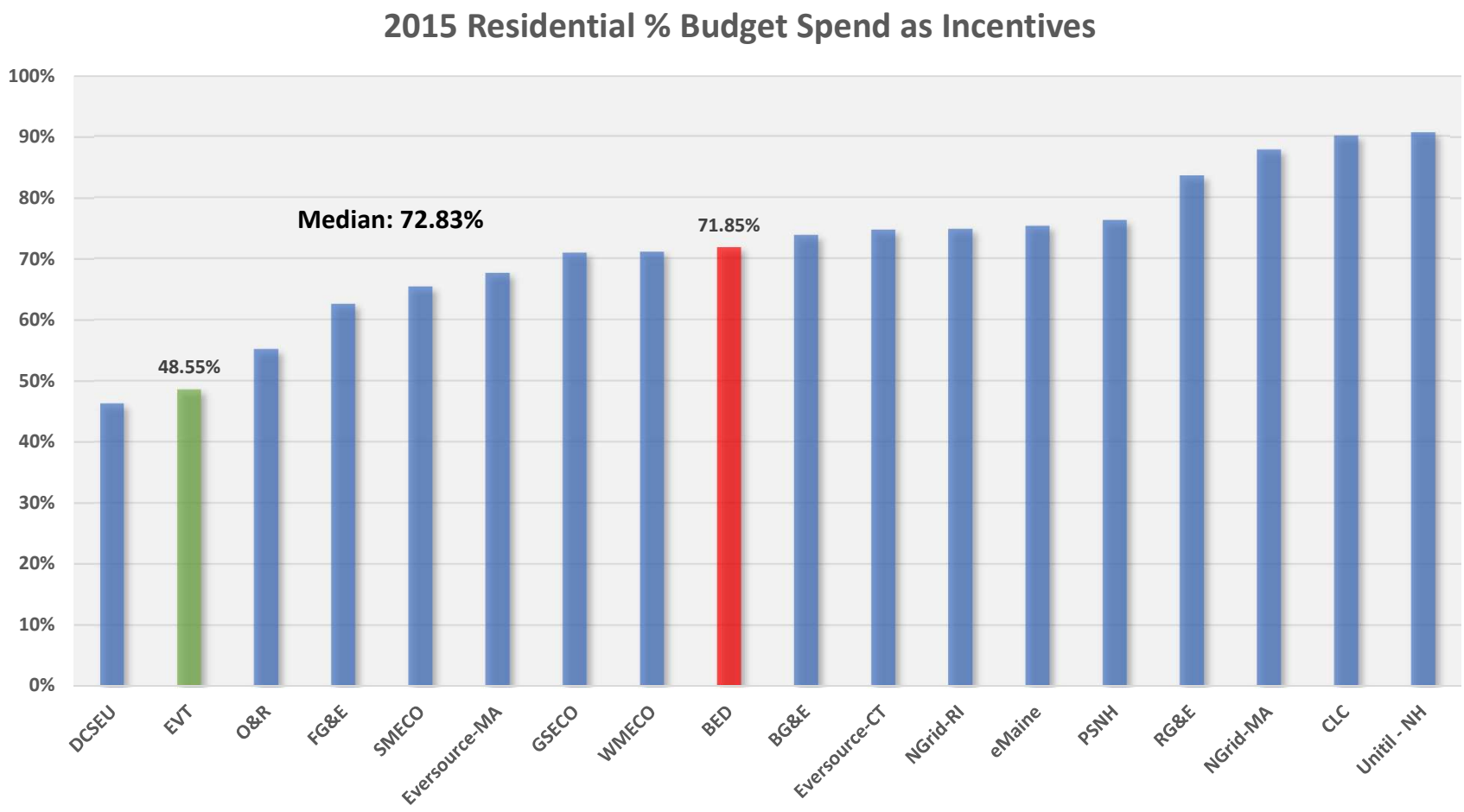
In 2015, both EVT and BED's cost per Residential levelized kWh saved was below the median value of $0.05/kWh.



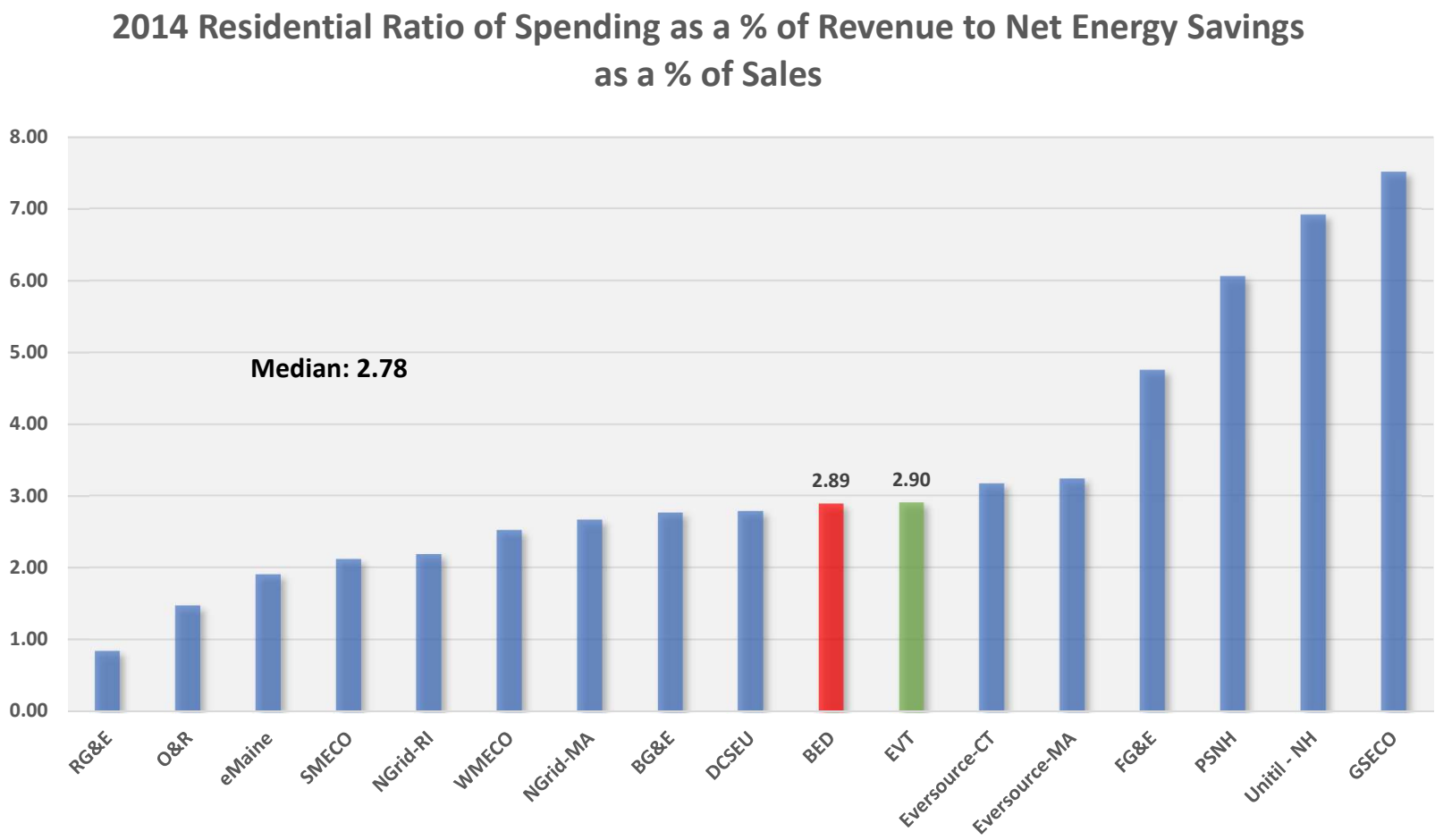
In 2014, BED and EVT spent 64.99% and 45.57%, respectively, of their budgets on incentives, both below the median of 73.74%.



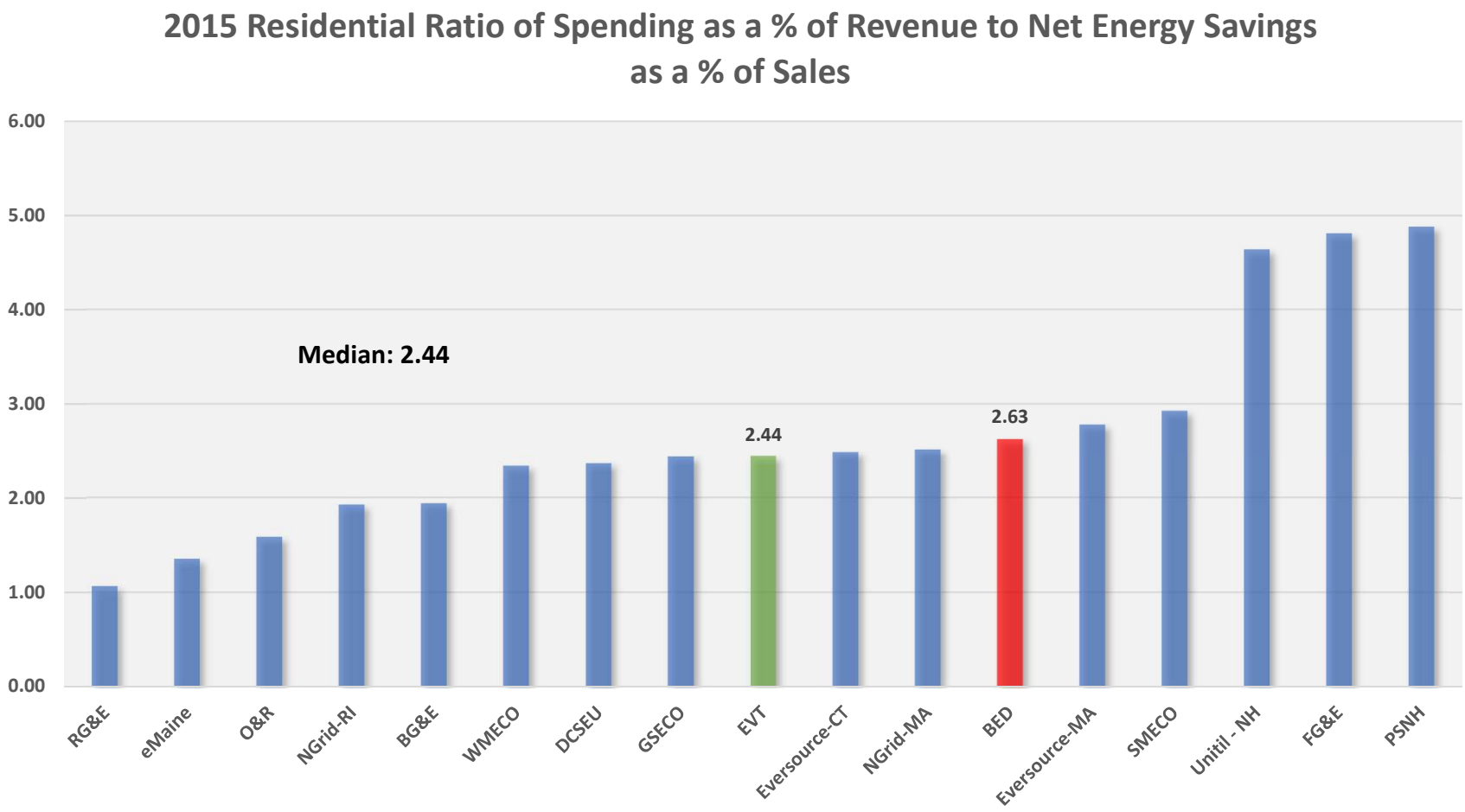
In 2015, BED spent 71.85% of its budget on incentives, above the median of 72.83%, while EVT spent less than the median at 48.55%.



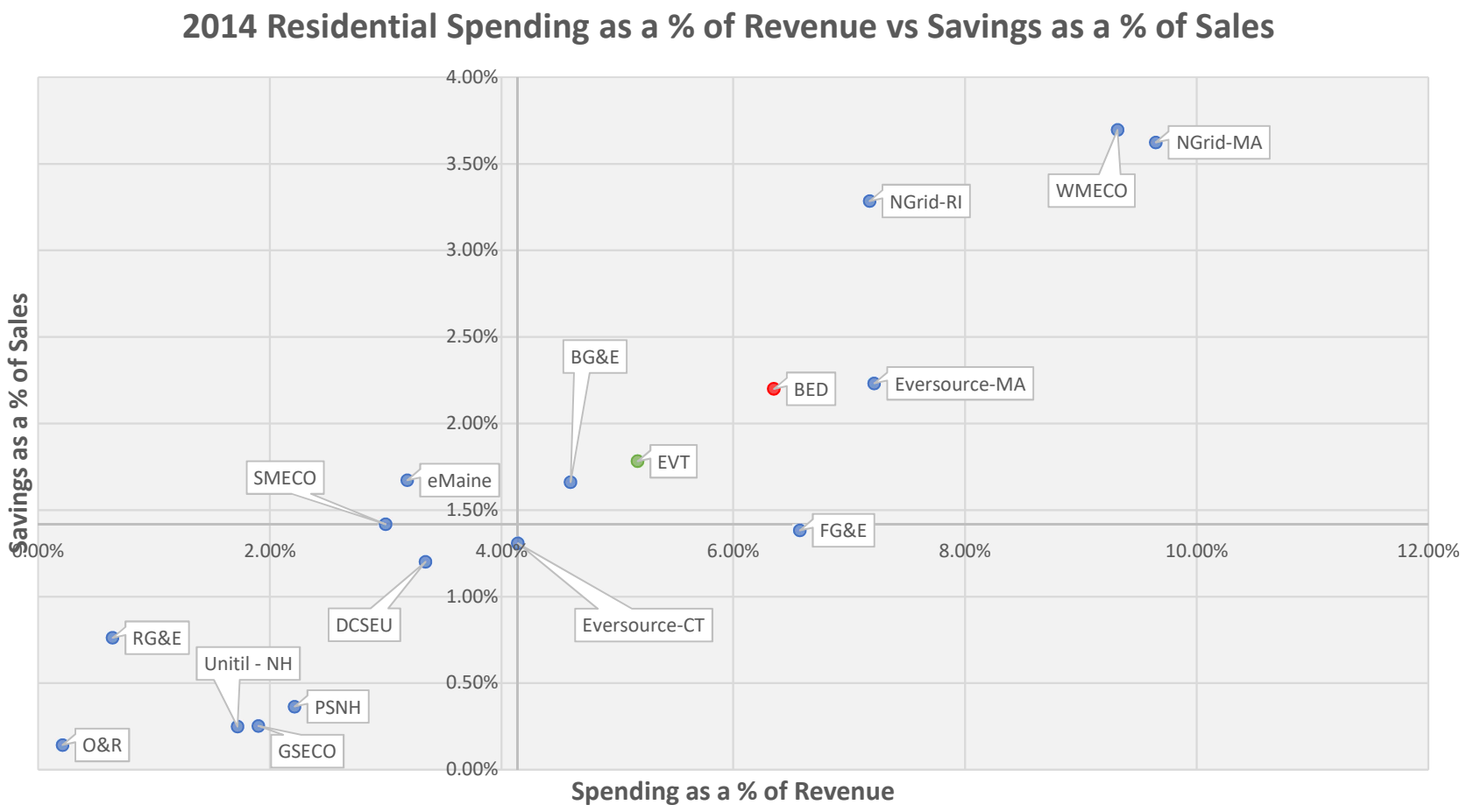
In 2014, EVT and BED both had higher than the median value of 2.78 for their Residential ratio of spending as a % of revenues to net annual savings as a percent of sales, at 2.89 and 2.90.



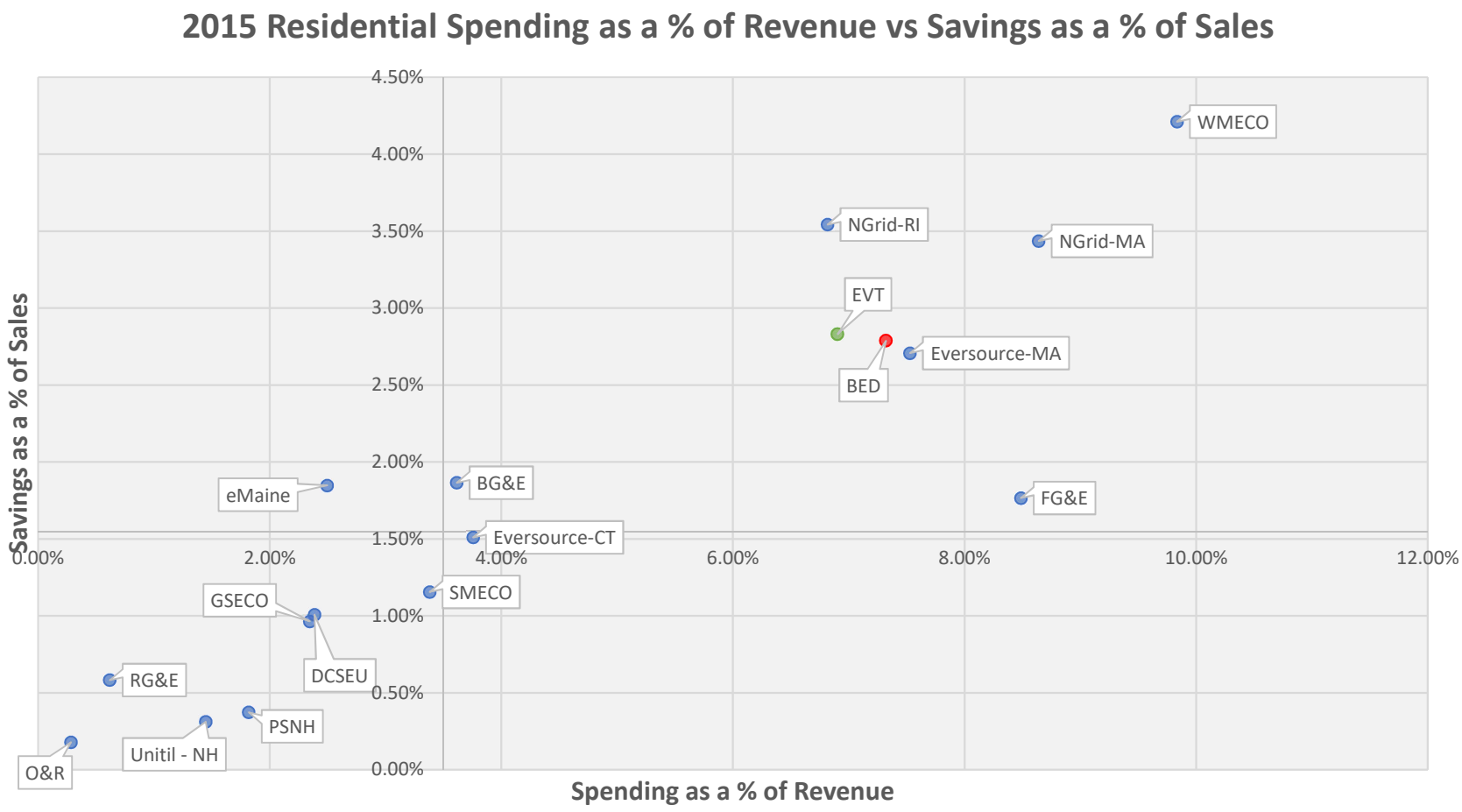
In 2015, at 2.44 EVT had equal to the median value for its Residential ratio of spending as a % of revenues to net annual savings as a percent of sales. BED's ratio was above the median value at 2.63.



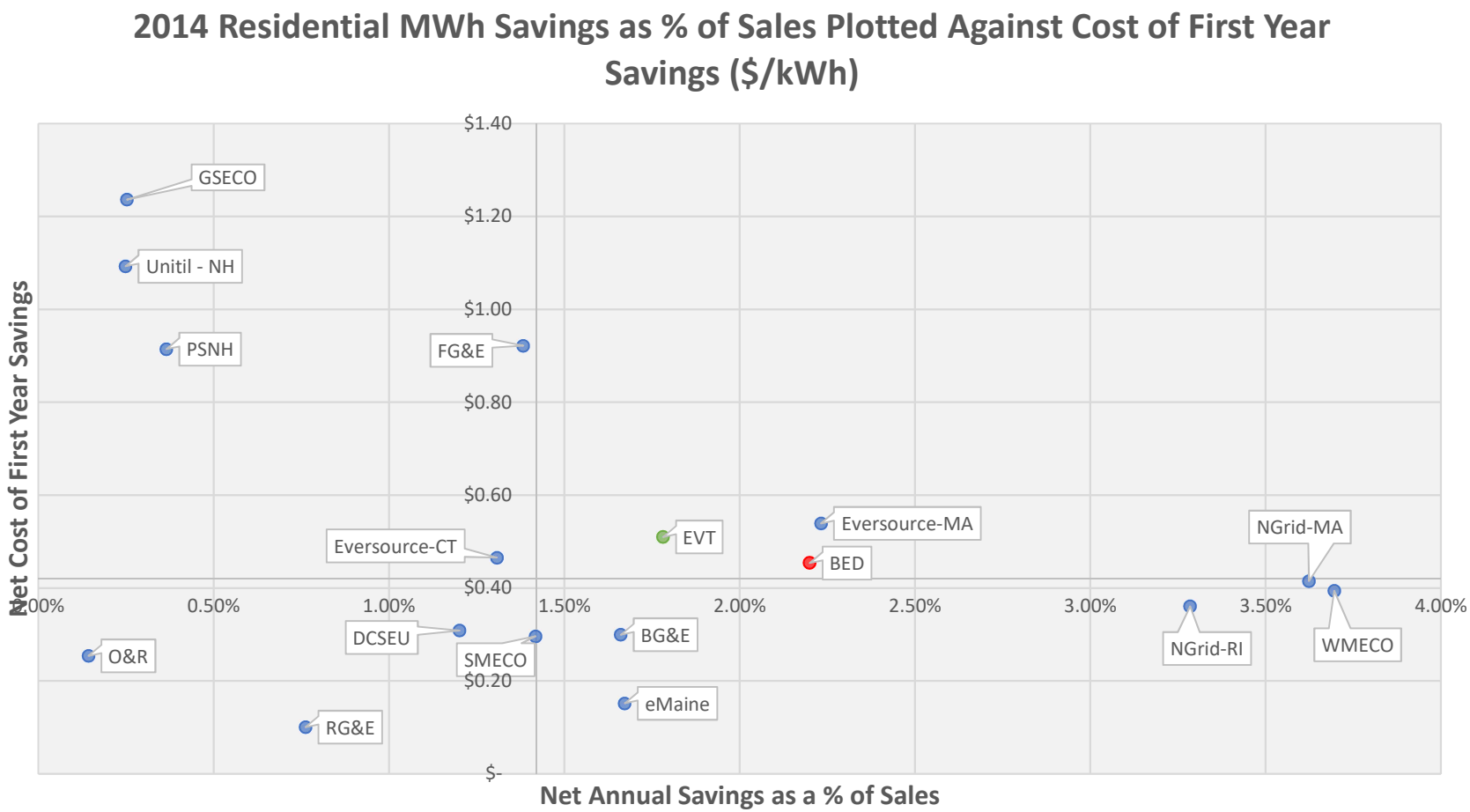
In 2014, EVT and BED both had higher than median Residential spending as a percent of revenues and higher savings as a percent of sales.



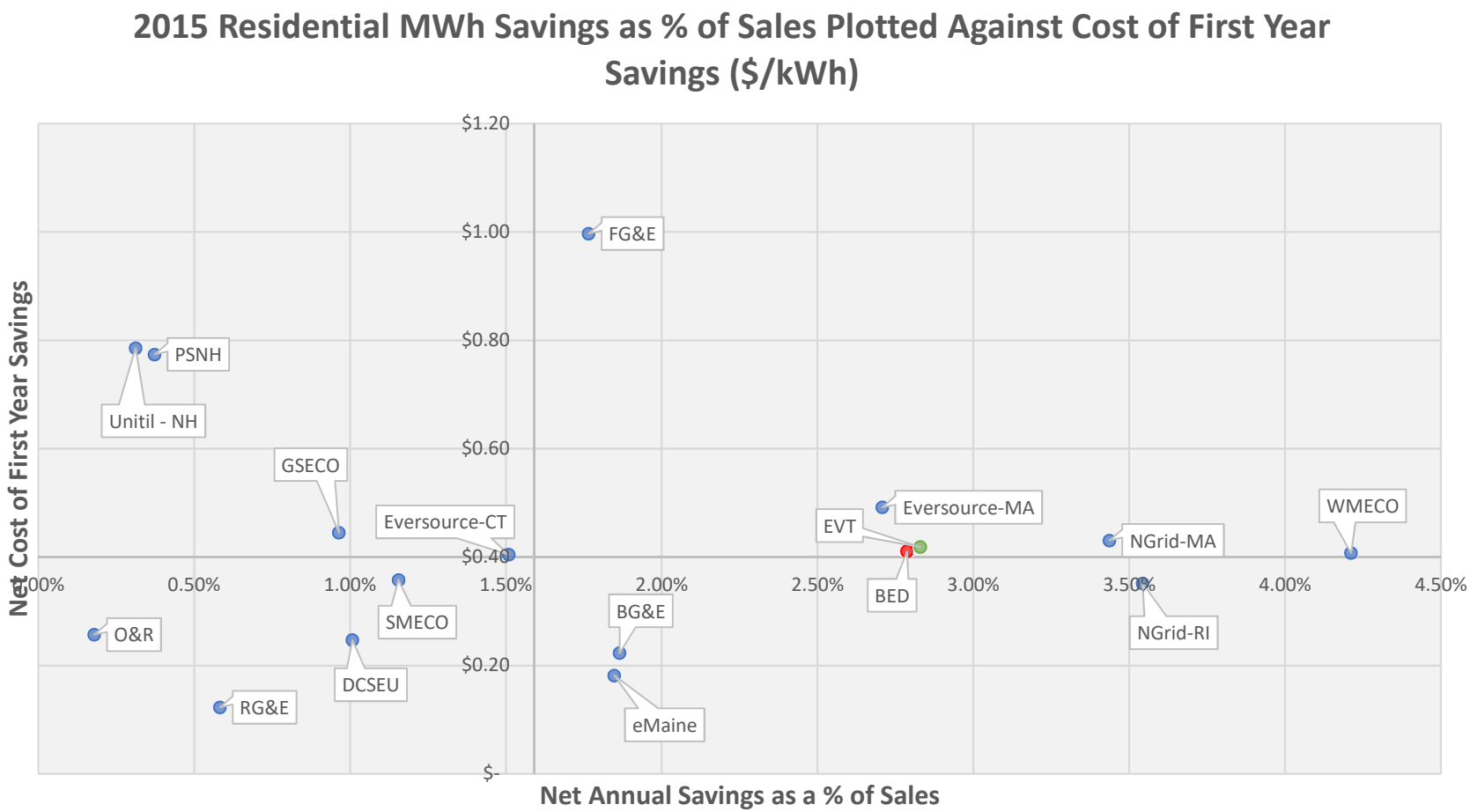
In 2015, EVT and BED both had higher than median Residential spending as a percent of revenues and higher savings as a percent of sales.



In 2014, both EVT and BED achieved higher than median savings as a percent of sales and higher than median costs per first year kWh saved.



In 2015, EVT and BED again both achieved higher than median savings as a percent of sales and higher than median costs per first year kWh saved.



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Section 5:
2014 and 2015 Gas Overall Benchmarking Results

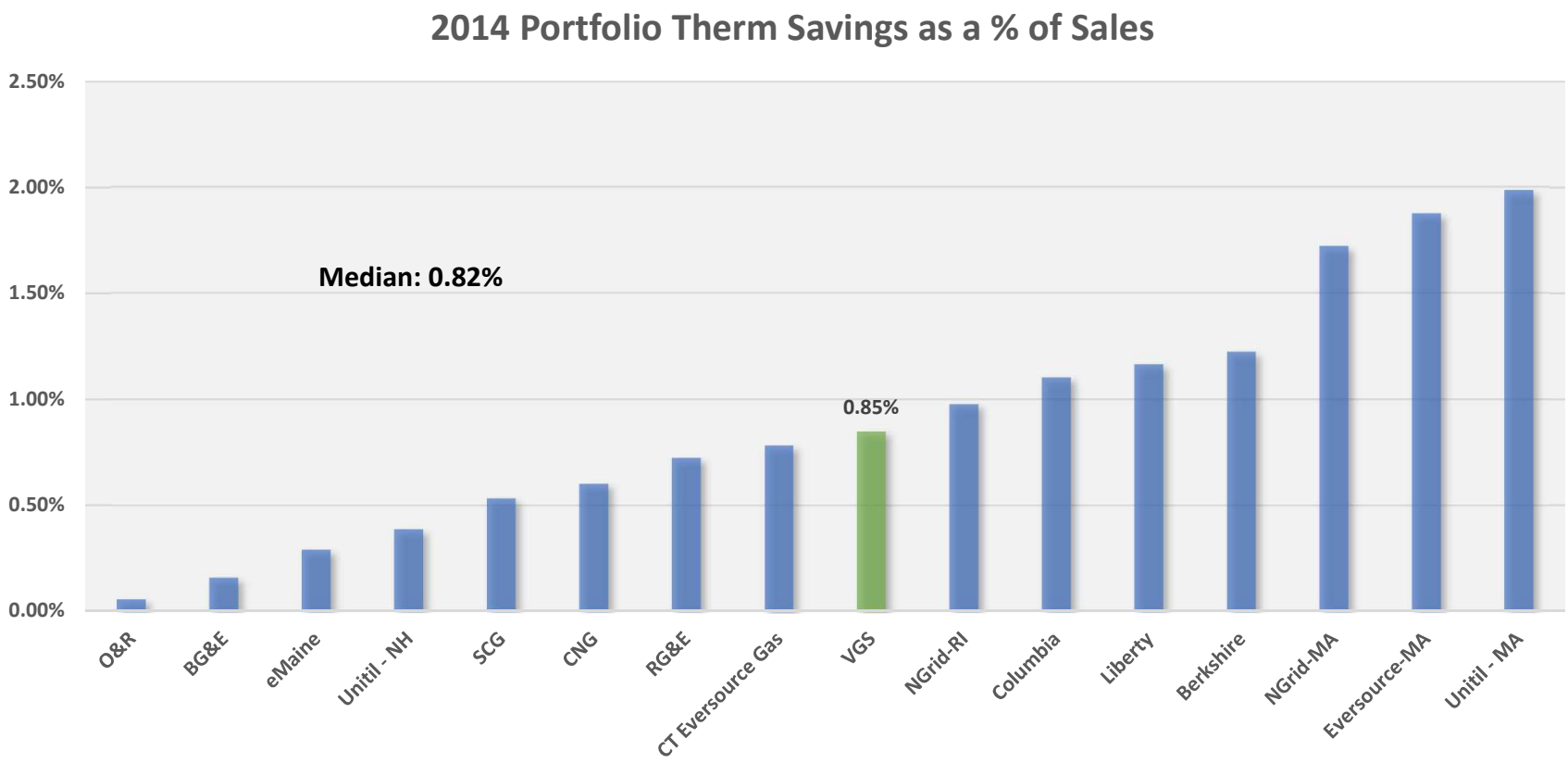
Section 5: 2014 Gas Overall Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	3.7%	0.8%	$1.07	$5.22	$0.46	$0.36
VGS	2.0%	0.9%	$1.05	$2.46	$0.19	$0.15

Section 5: 2015 Gas Overall Benchmarking Results

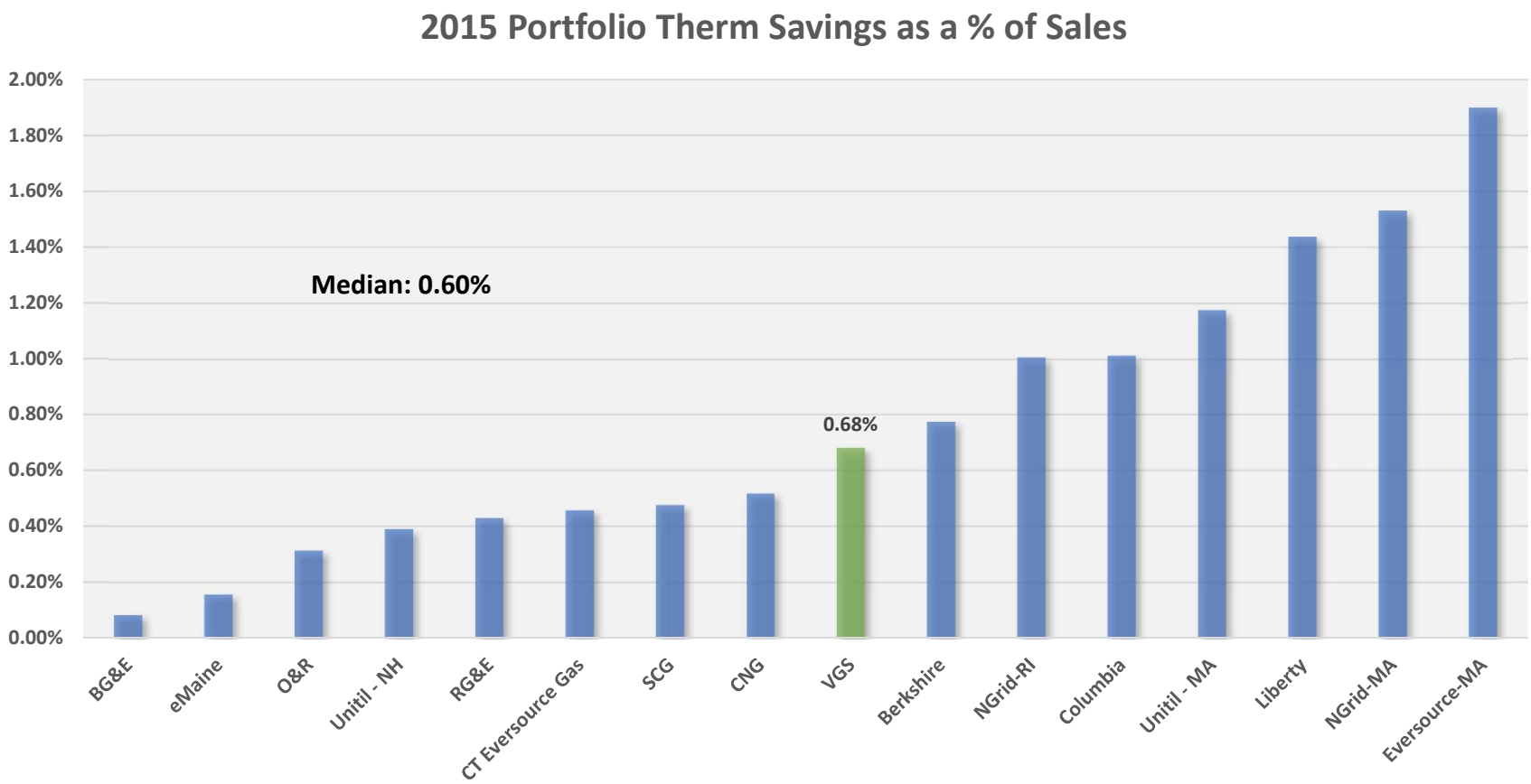
	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual Therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	3.9%	0.6%	$0.99	$5.38	$0.48	$0.40
VGS	2.0%	0.7%	$0.94	$2.72	$0.19	$0.14

In 2014, VGS's annual savings as percent of sales was 0.85%, higher than the comparison group median value of 0.82%.



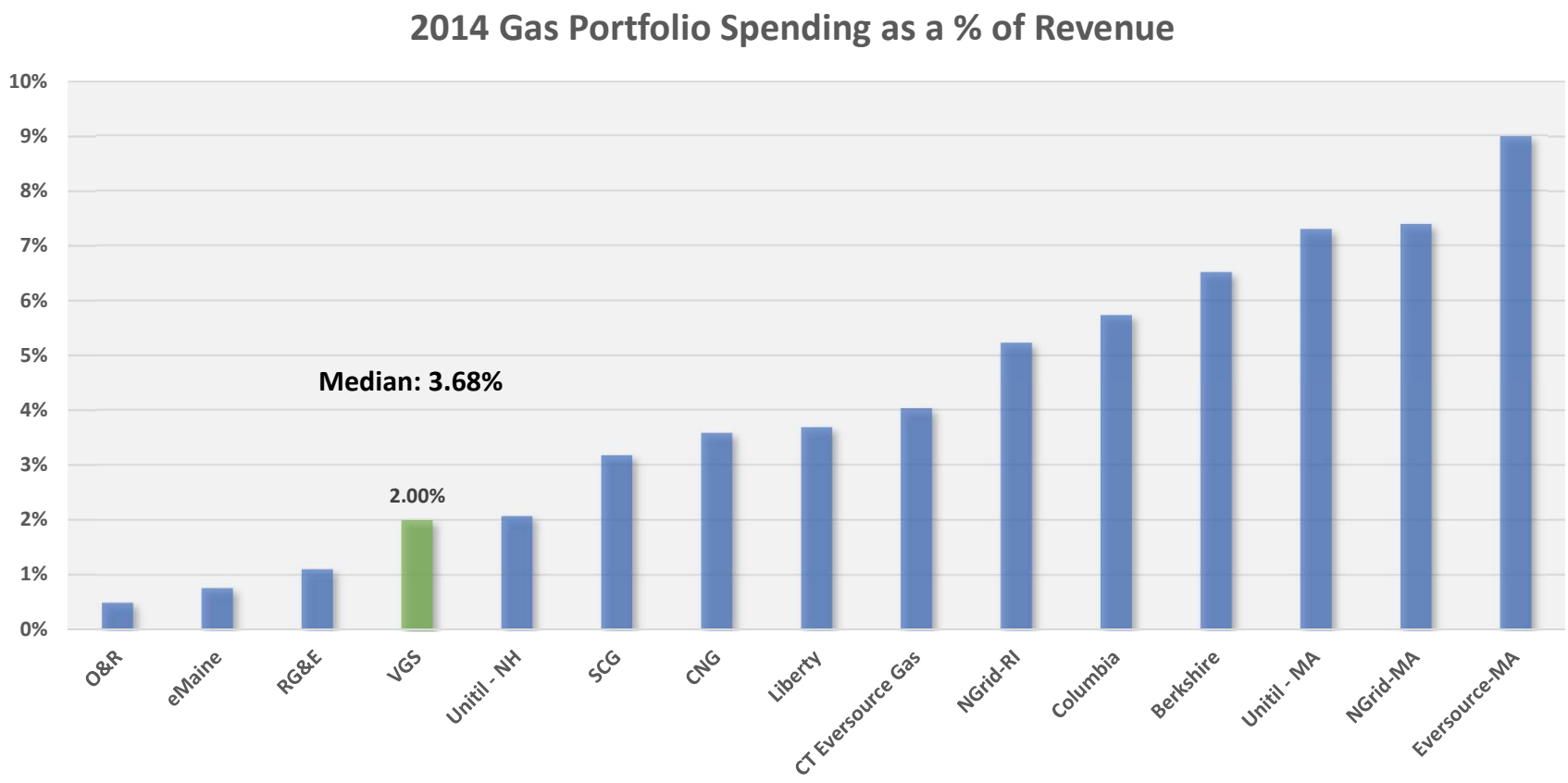
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS's annual savings as percent of sales was 0.68%, higher than the comparison group median value of 0.60%.



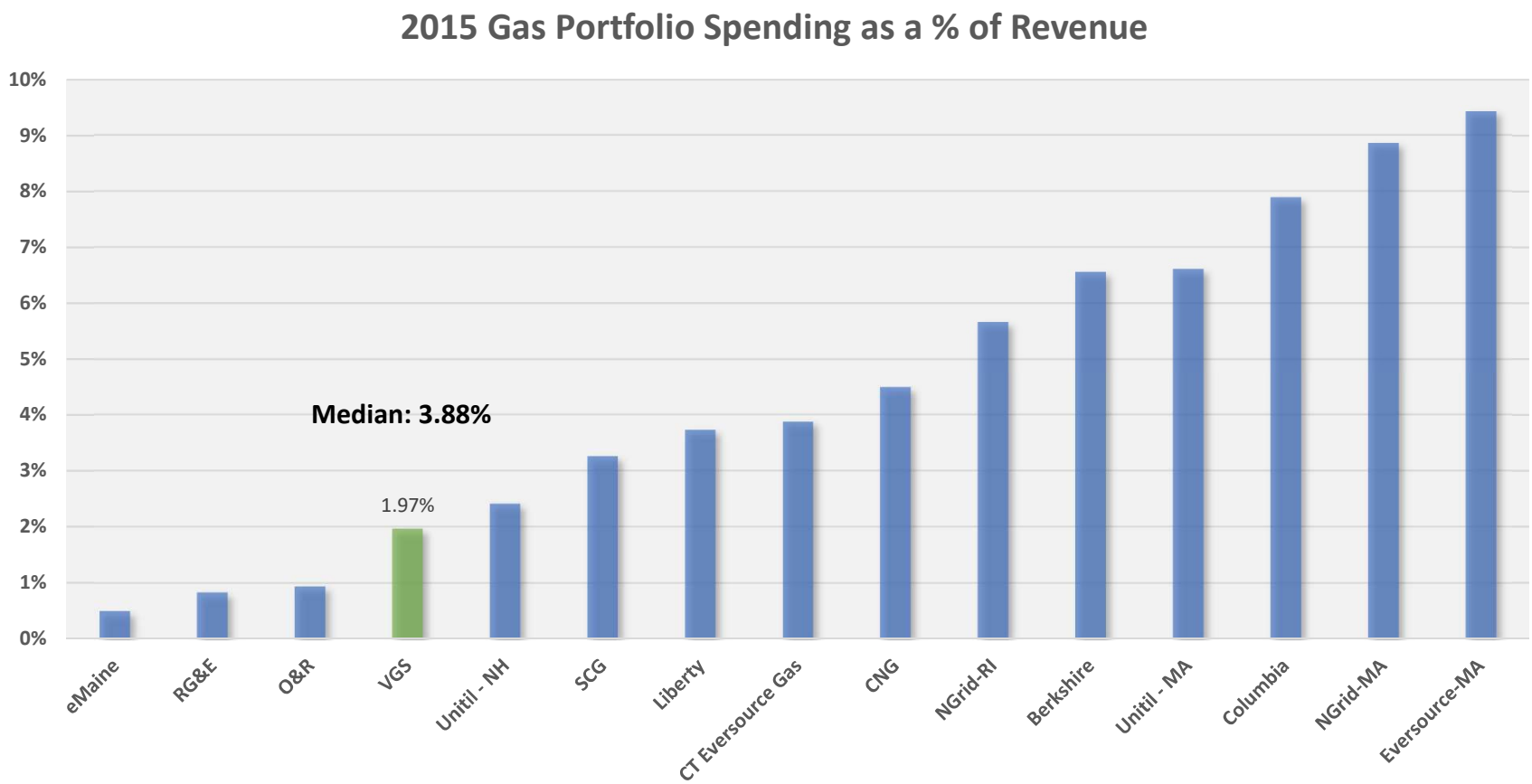
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS spent 2.00% of its revenues on its efficiency efforts, below the comparison group median value of 3.68%.



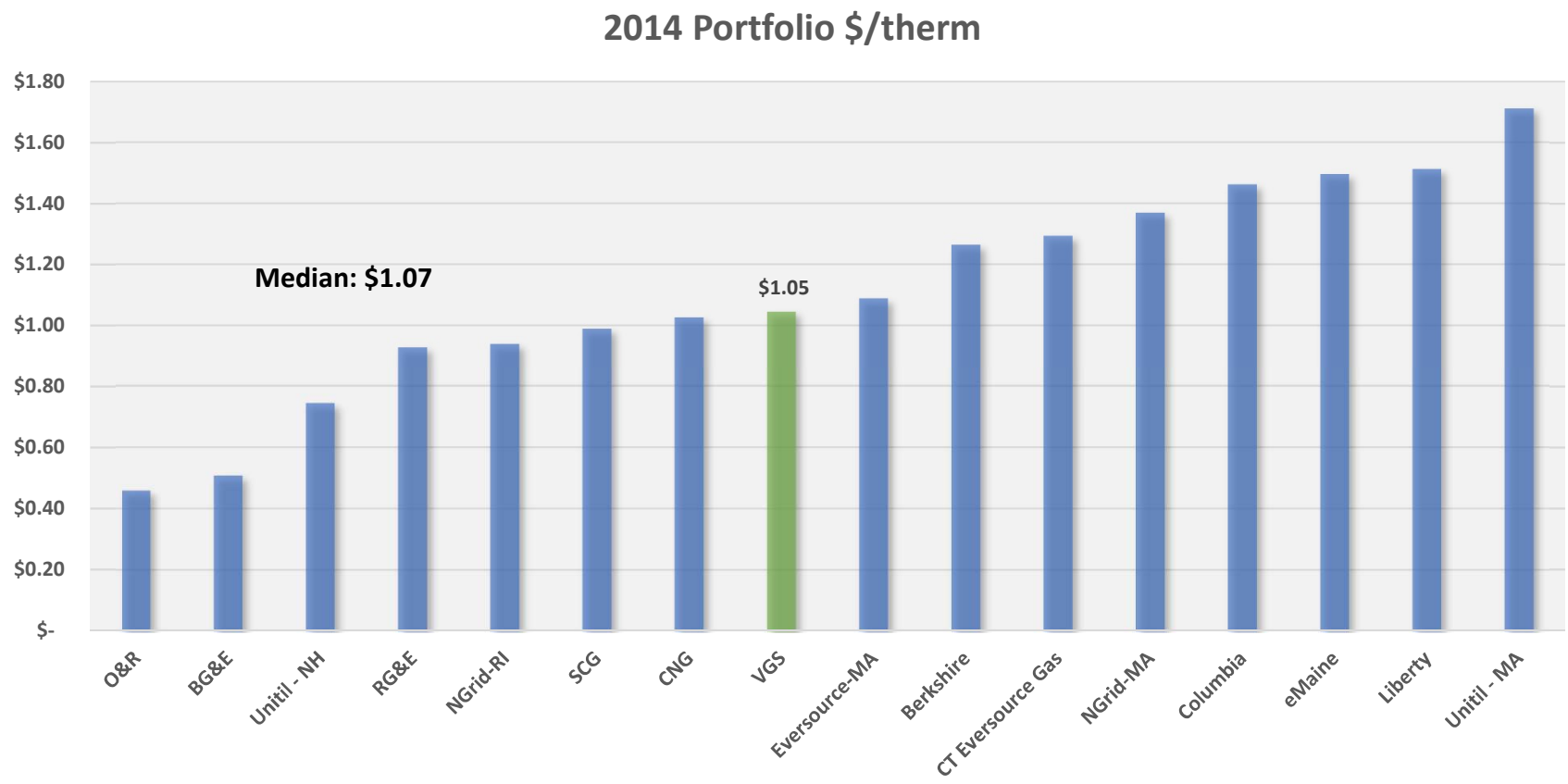
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS spent 1.97% of its revenues on its efficiency efforts, below the comparison group median value of 3.88%.

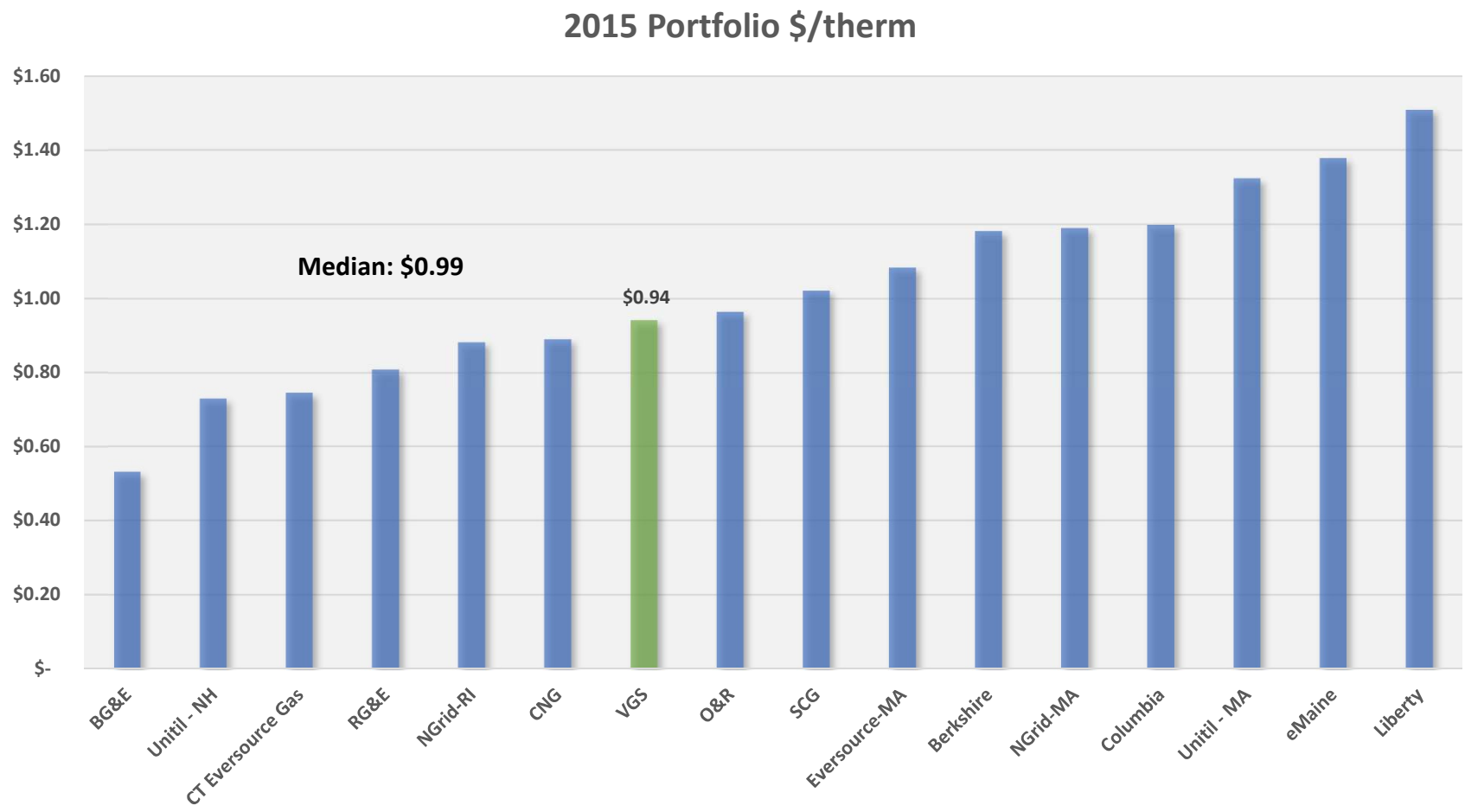


Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

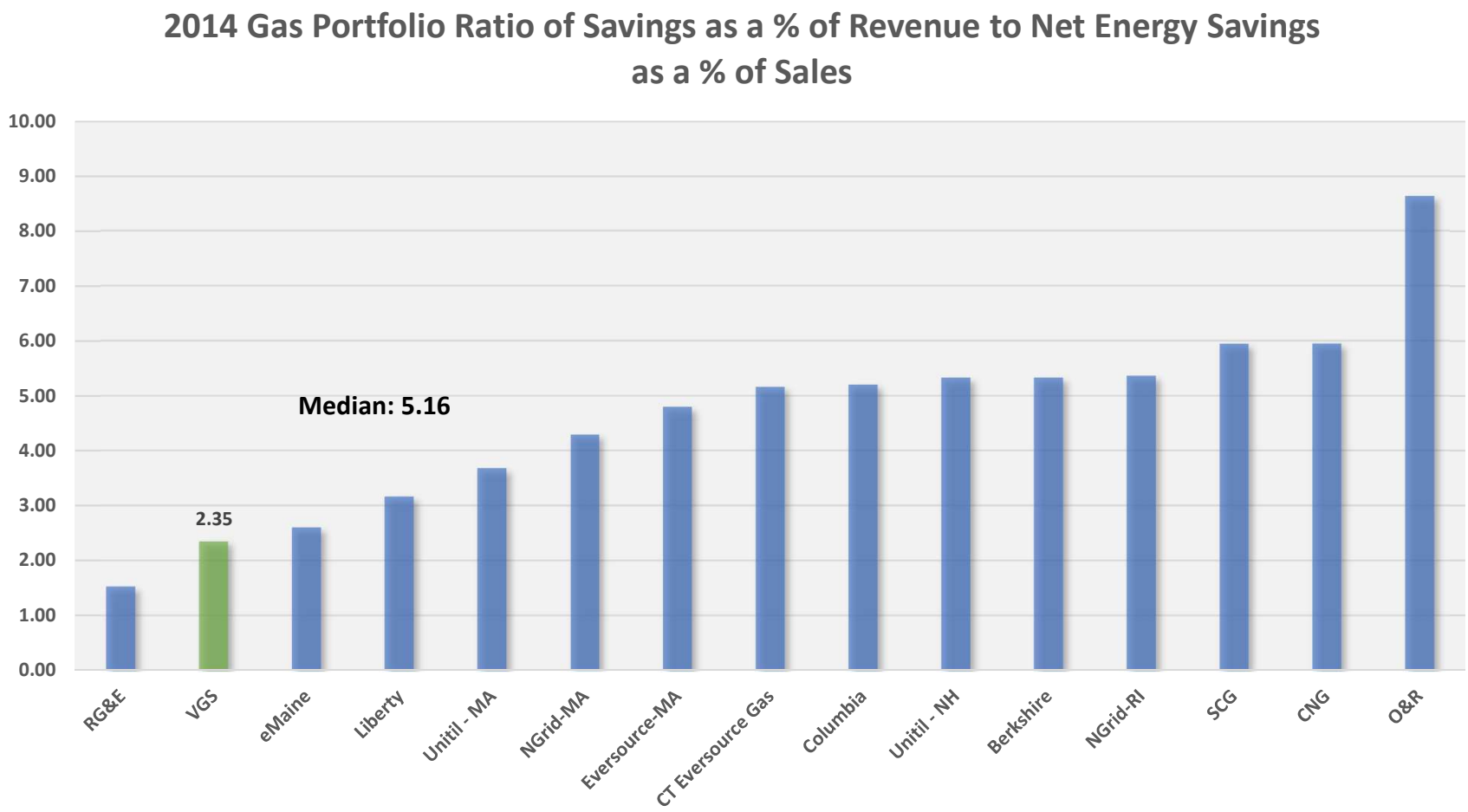
In 2014, VGS's average retail rate was $1.05/therm, lower than the comparison group at $1.07/therm.



In 2015, VGS's average retail rate was $0.94/therm, lower than the comparison group at $0.99/therm.

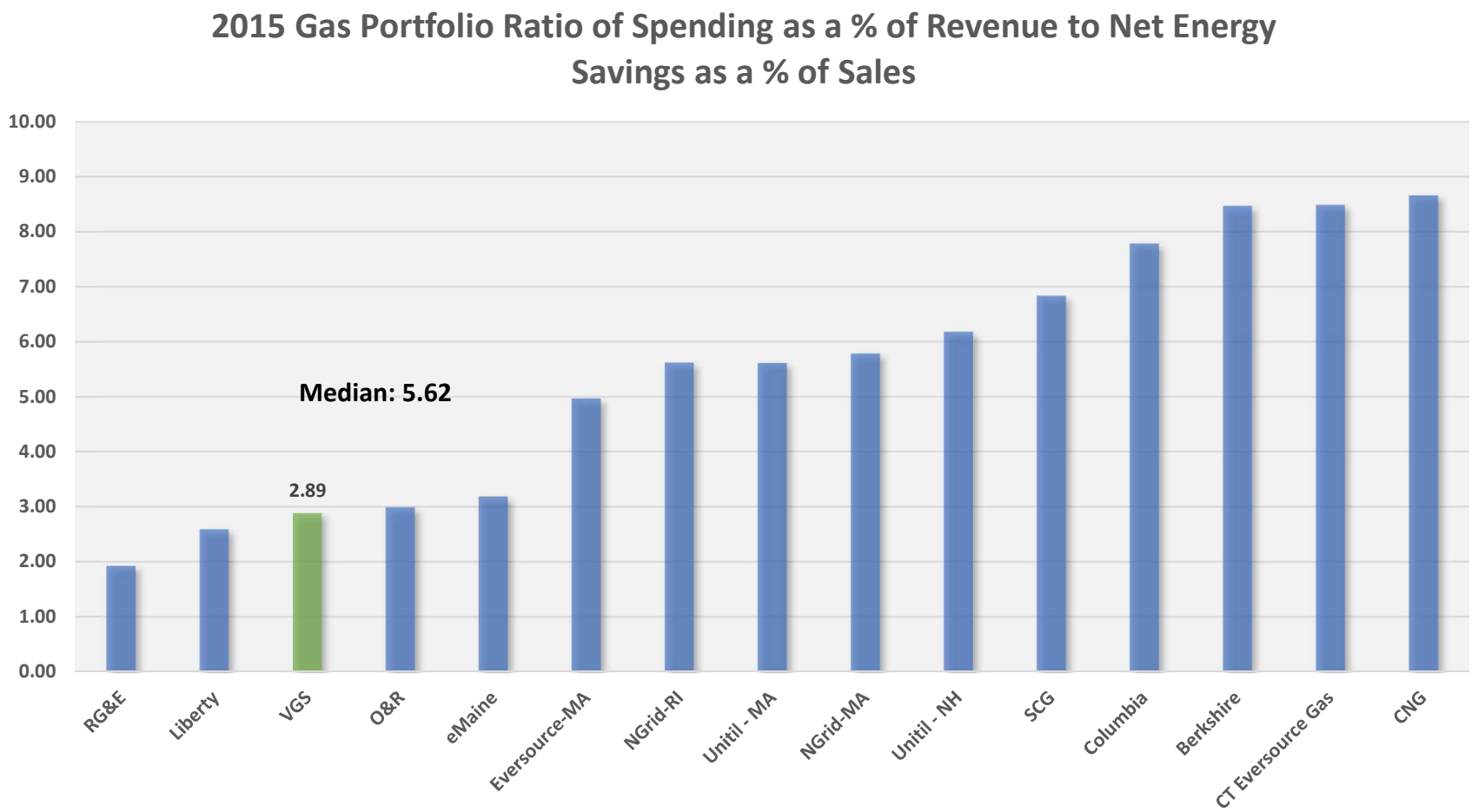


VGS's 2014 ratio of spending as a percent of revenue to net savings as a percent of sales of 2.35 is less than the median of the comparison group of 5.16.



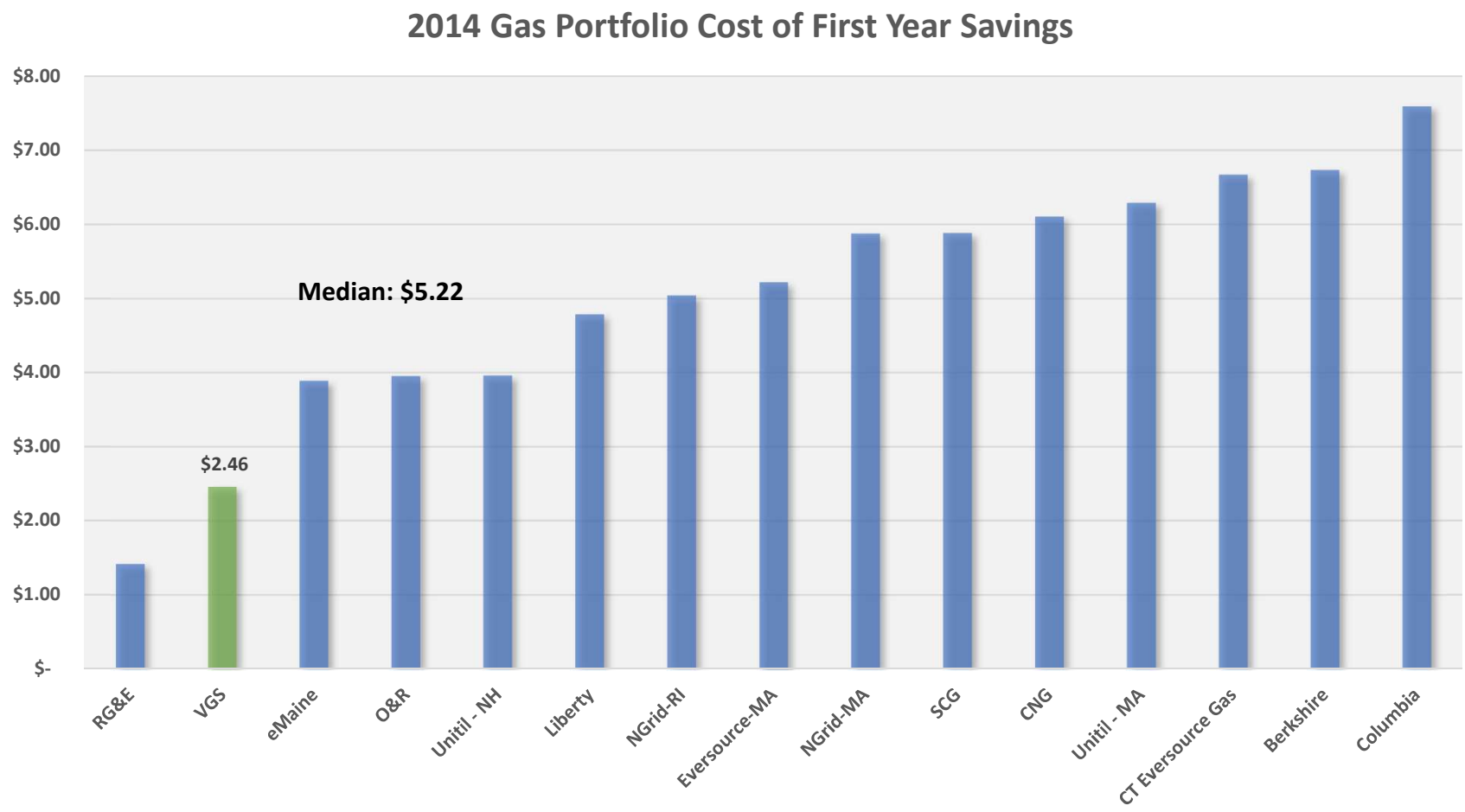
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 ratio of spending as a percent of revenue to net savings as a percent of sales of 2.89 is less than the median of the comparison group of 5.62.



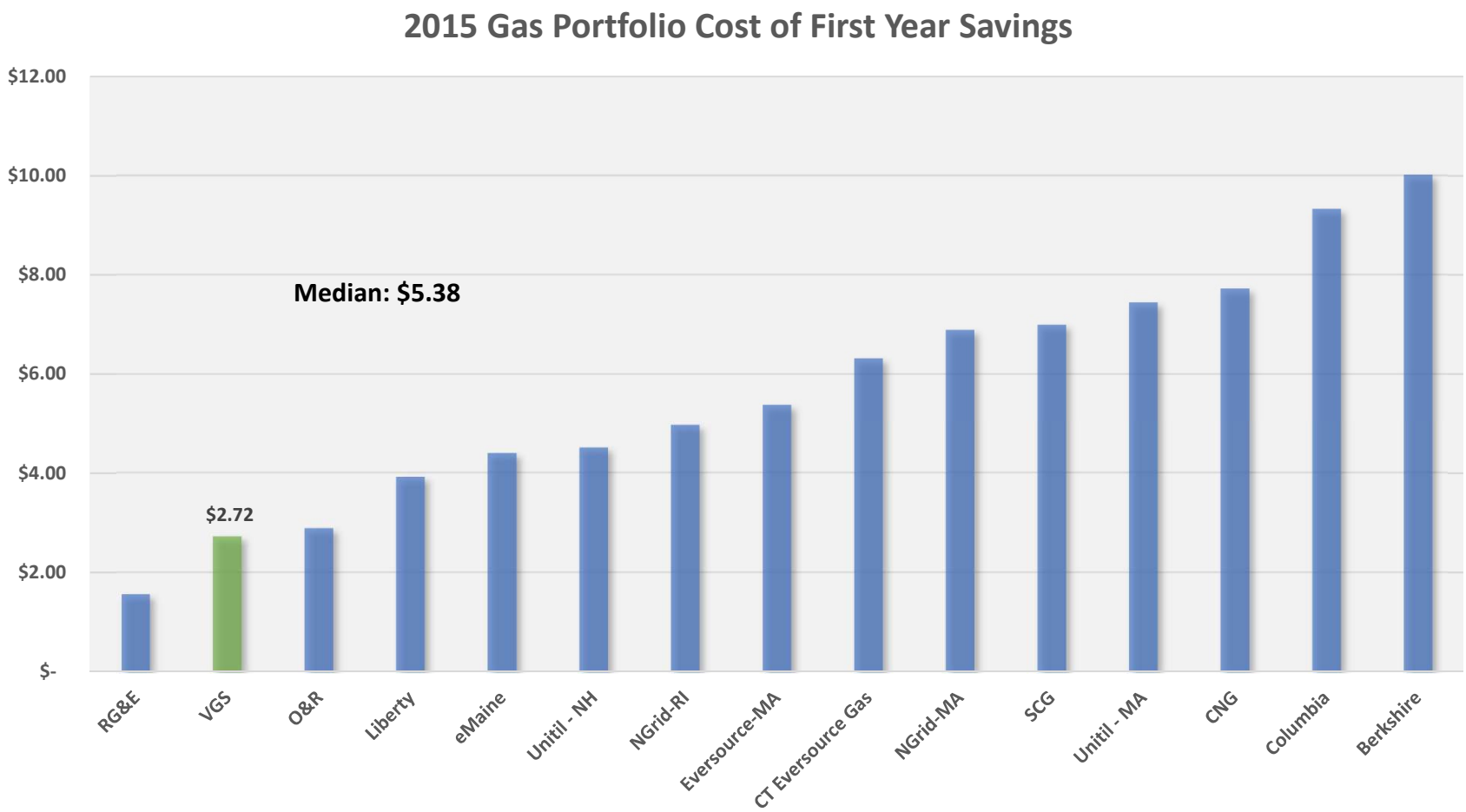
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS's cost of per annual first year therm saved was $2.46/therm, less than the median of the comparison group at $5.22/therm.



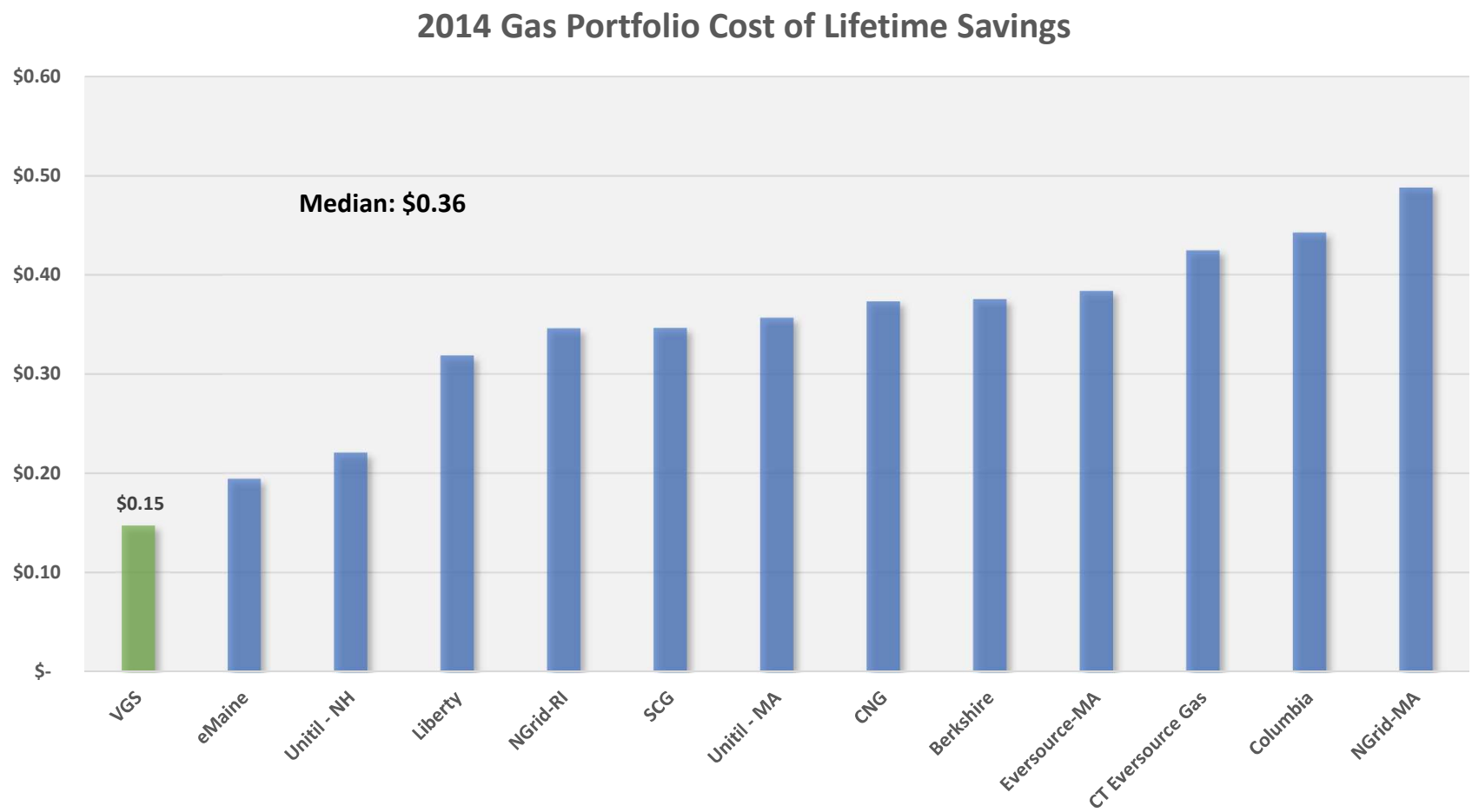
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS's cost of per annual first year therm saved was $2.72/therm, less than the median of the comparison group at $5.38/therm.



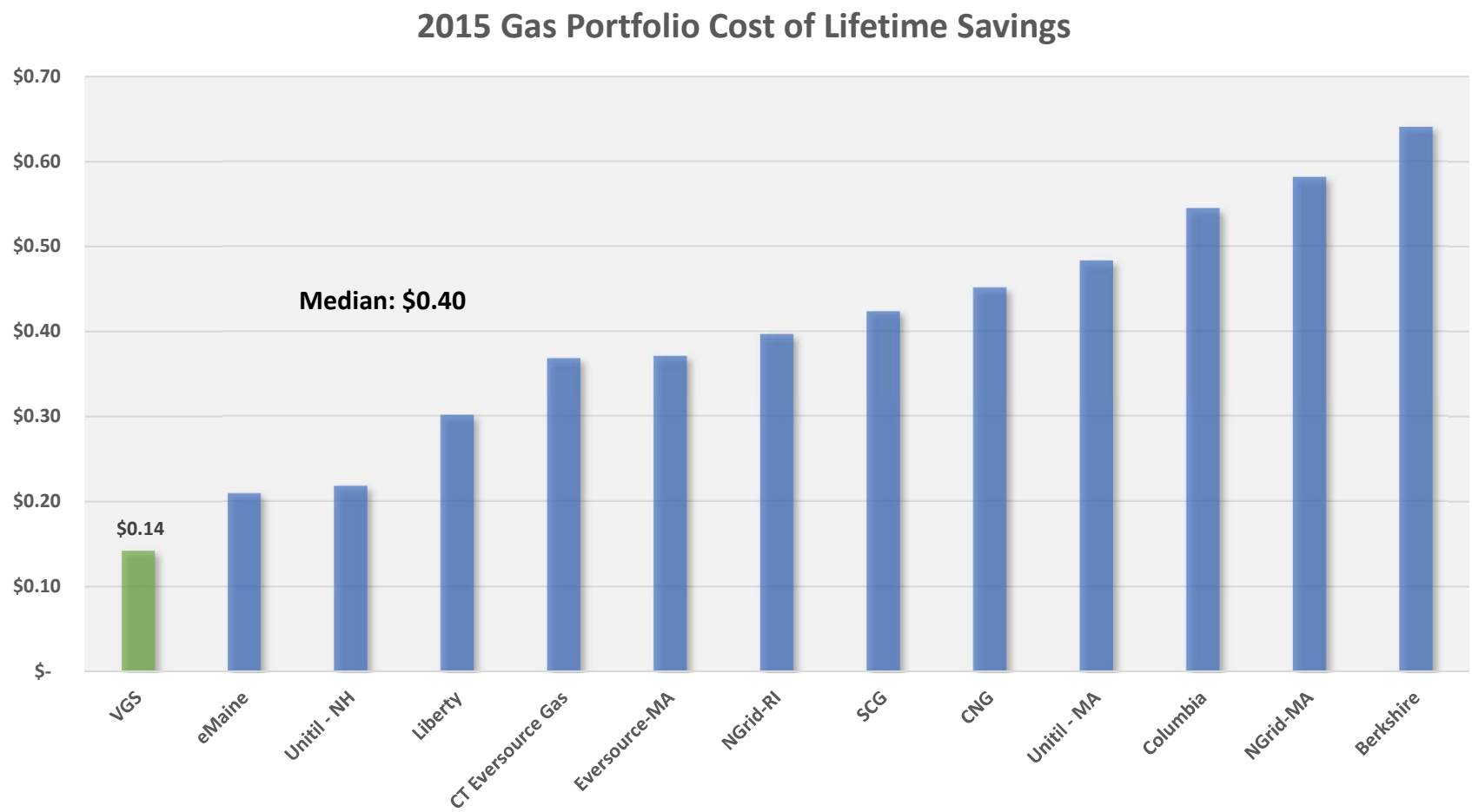
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS's cost of per lifetime therm saved was $0.15/therm, less than the median of the comparison group at $0.36/therm.



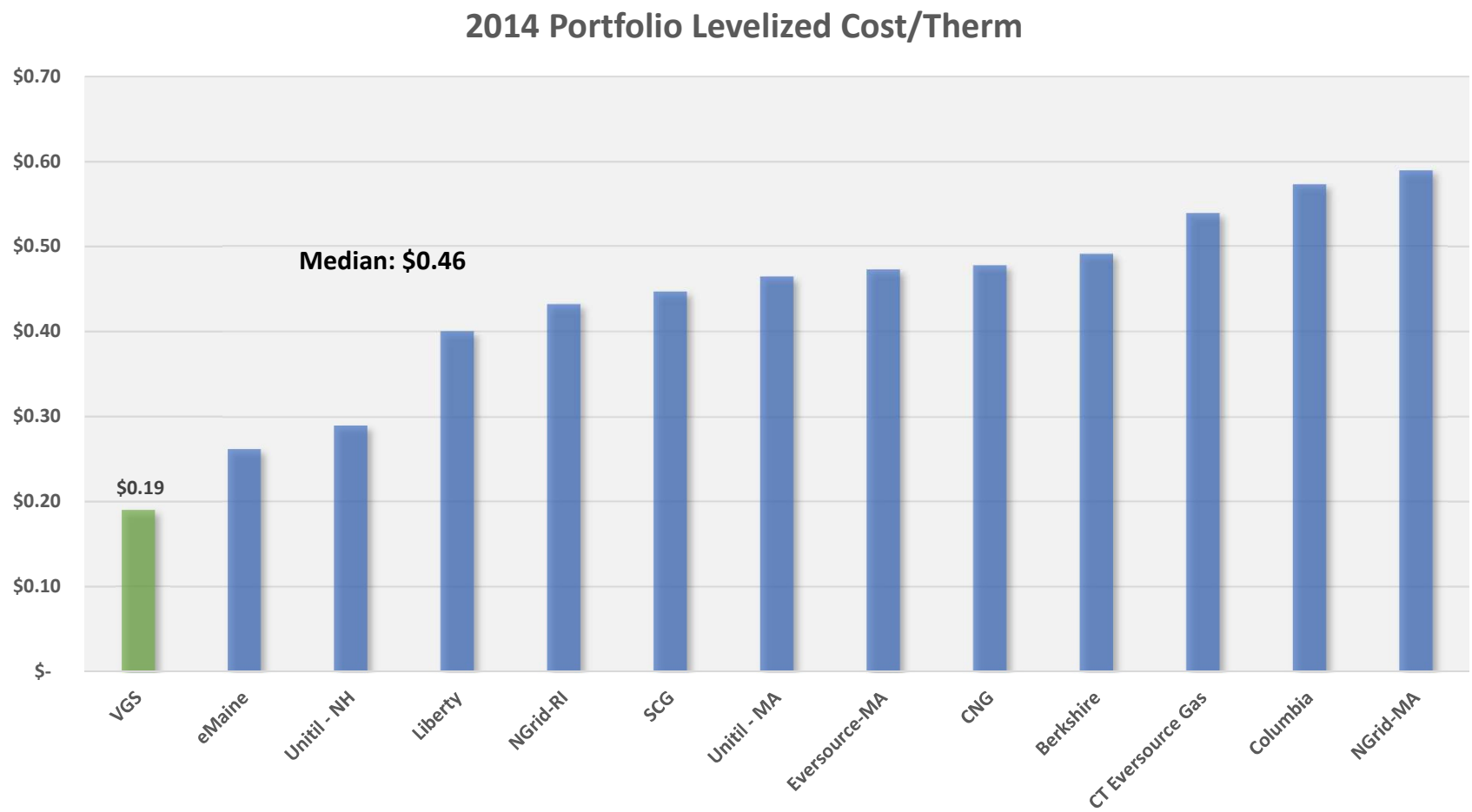
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015, VGS's cost of per lifetime therm saved was $0.14/therm, less than the median of the comparison group at $0.40/therm.



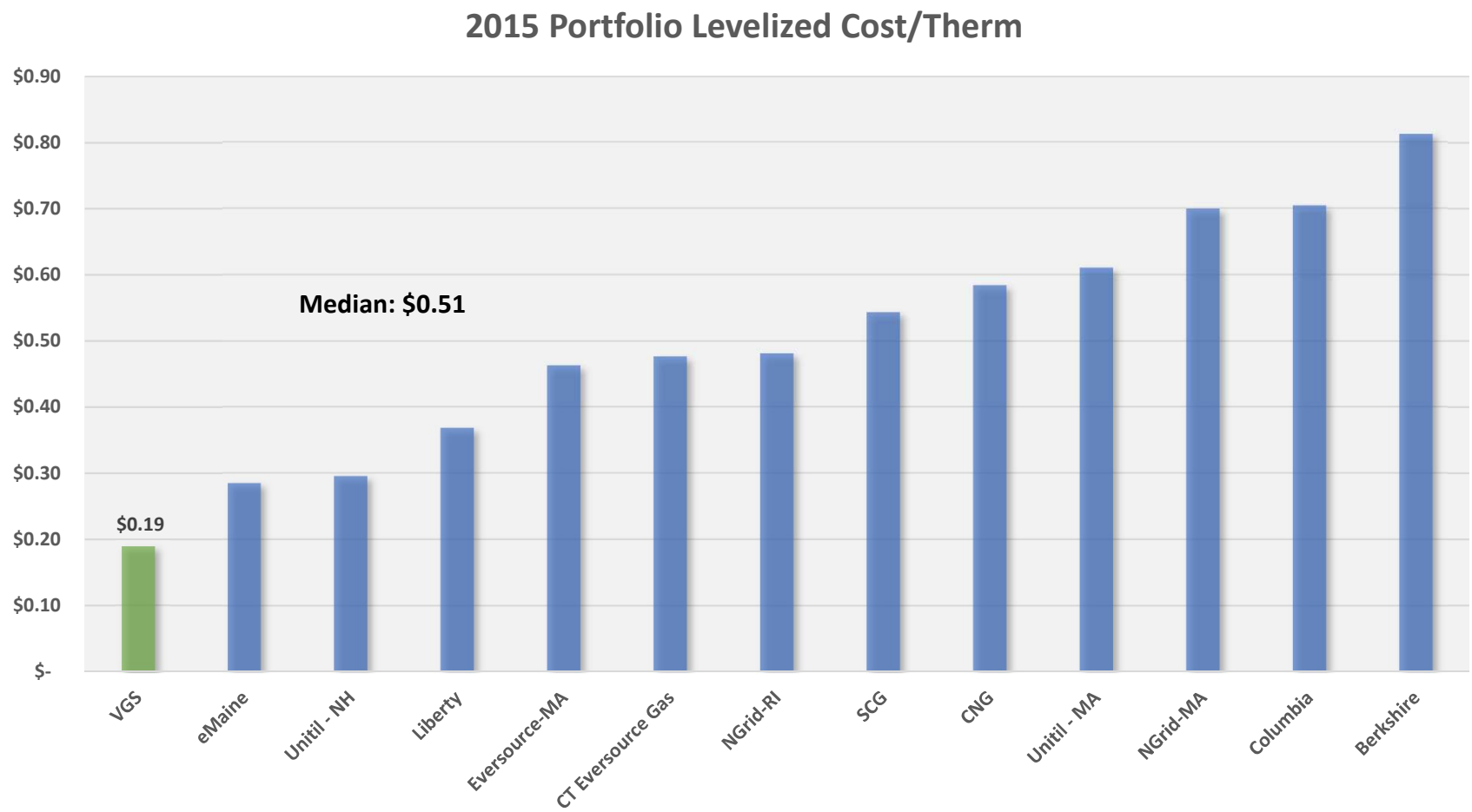
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2014, VGS's levelized cost per therm saved was $0.19/therm, less than the median of the comparison group at $0.46/therm.



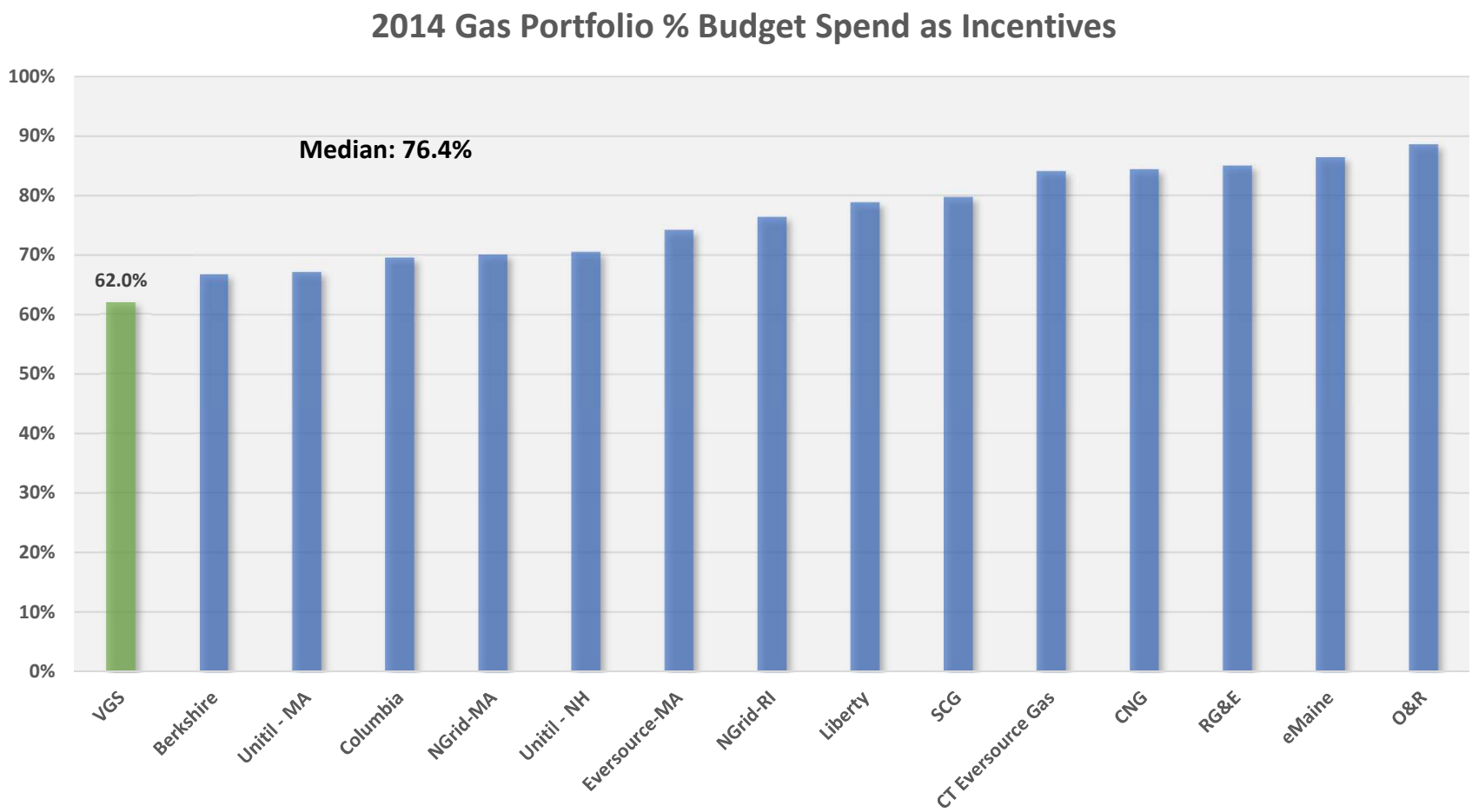
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015, VGS's levelized cost per therm saved was $0.19/therm, less than the median of the comparison group at $0.51/therm.



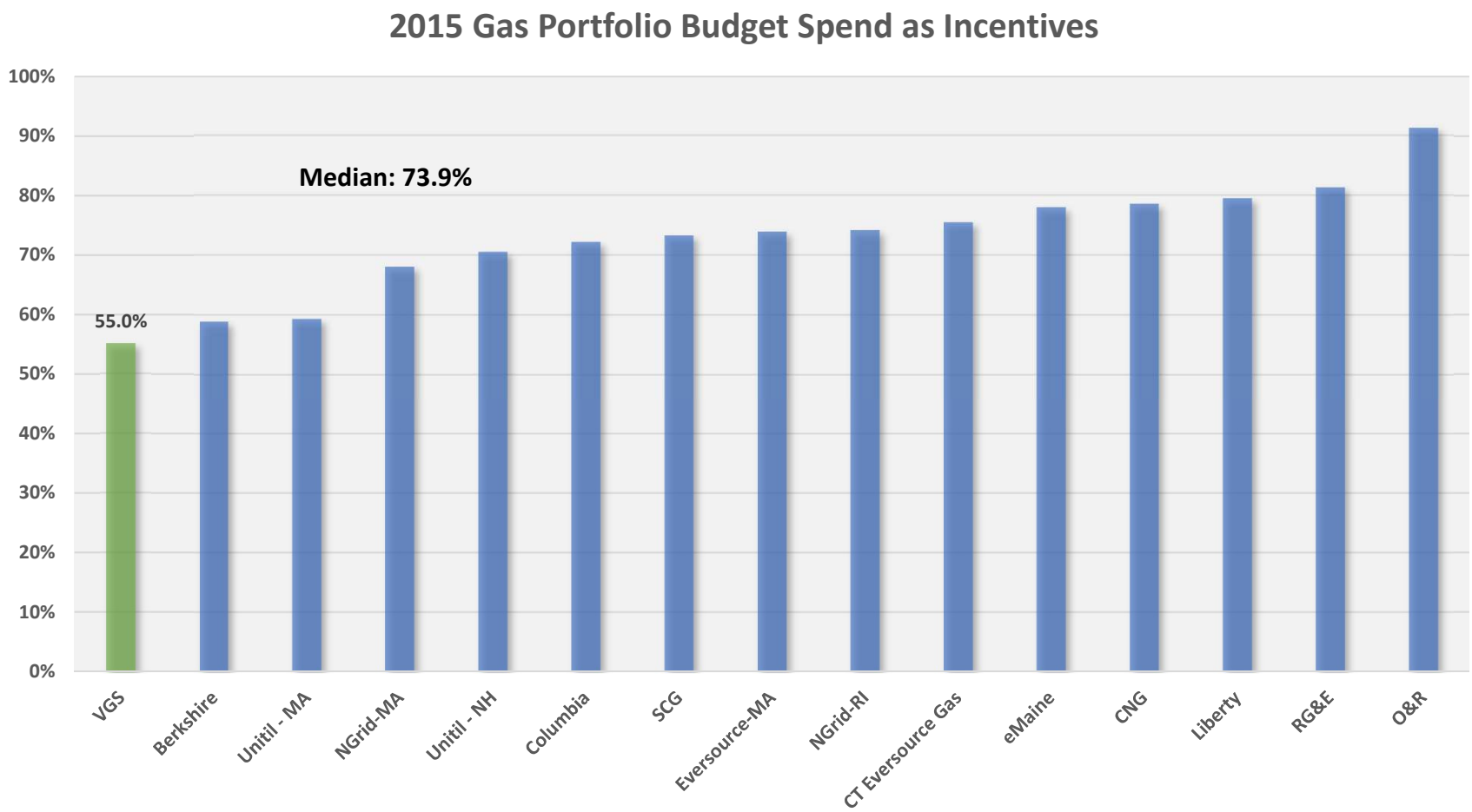
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2014 VGS spent 62.0% of its budget on incentives, less than the comparison group median of 76.4%.



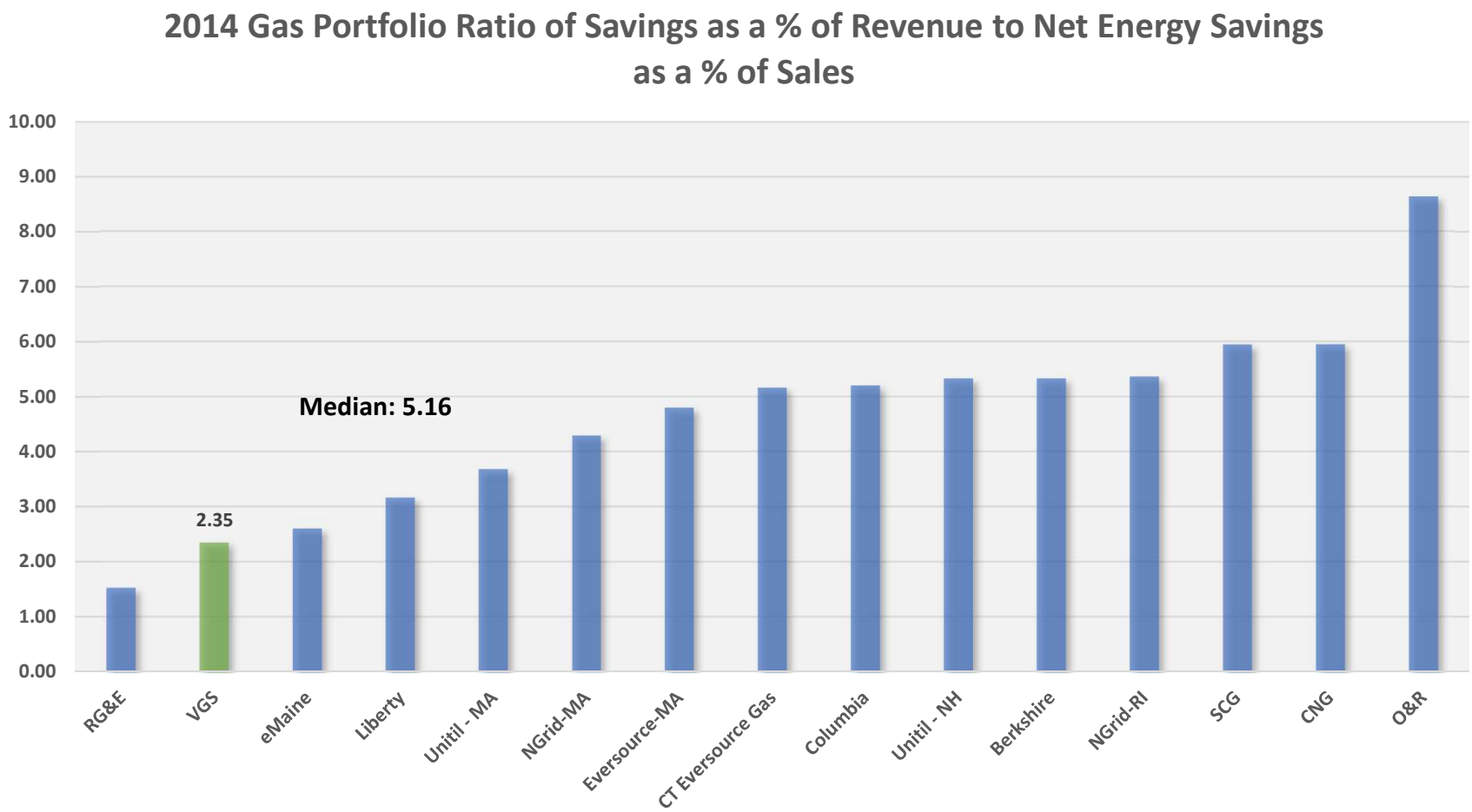
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015 VGS spent 55.0% of its budget on incentives, less than the comparison group median of 73.9%.



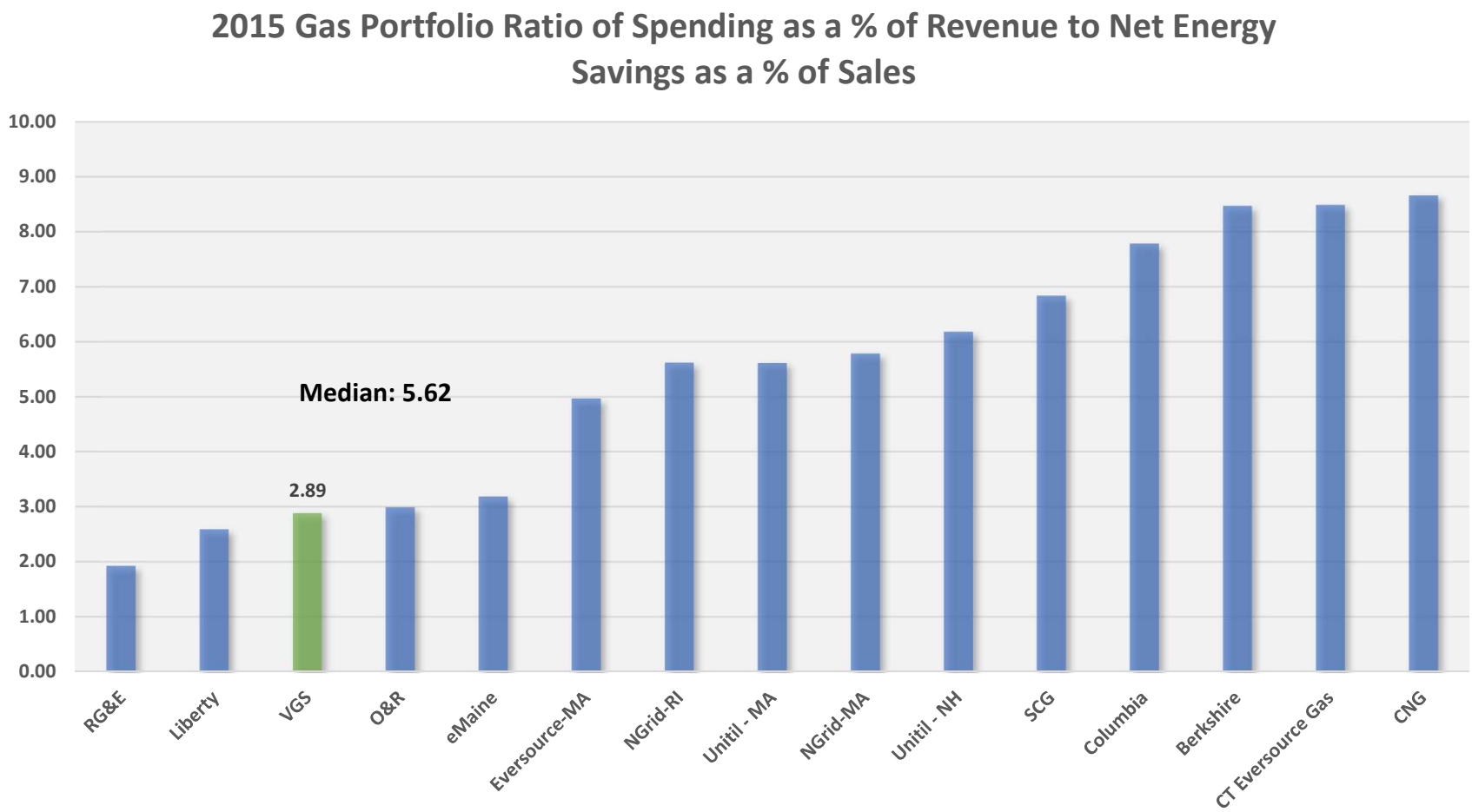
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

VGS's 2014 ratio of spending as a percent of revenue to net savings as a percent of sales of 2.35 is less than the median of the comparison group of 5.16.



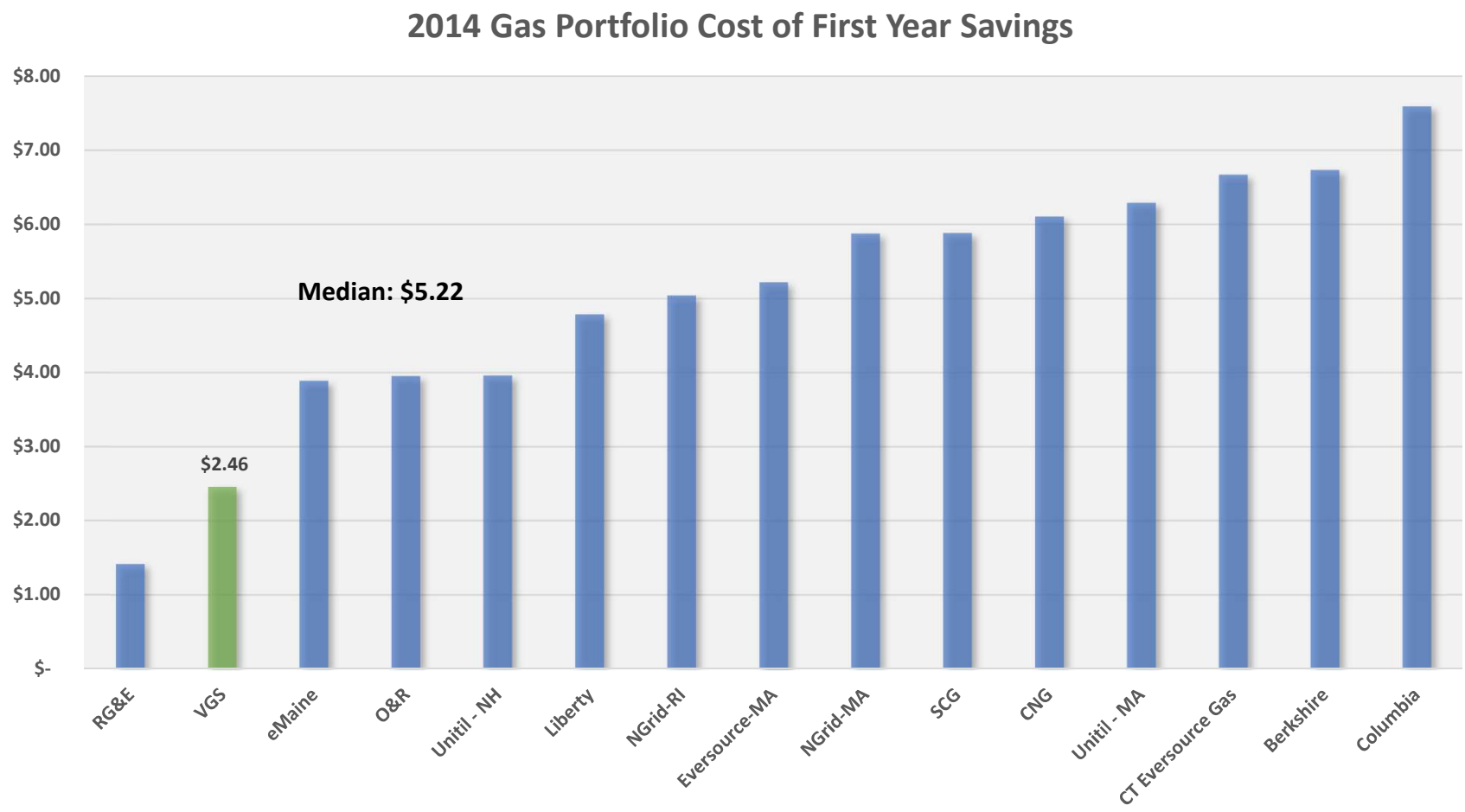
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 ratio of spending as a percent of revenue to net savings as a percent of sales of 2.89 is less than the median of the comparison group of 5.62.



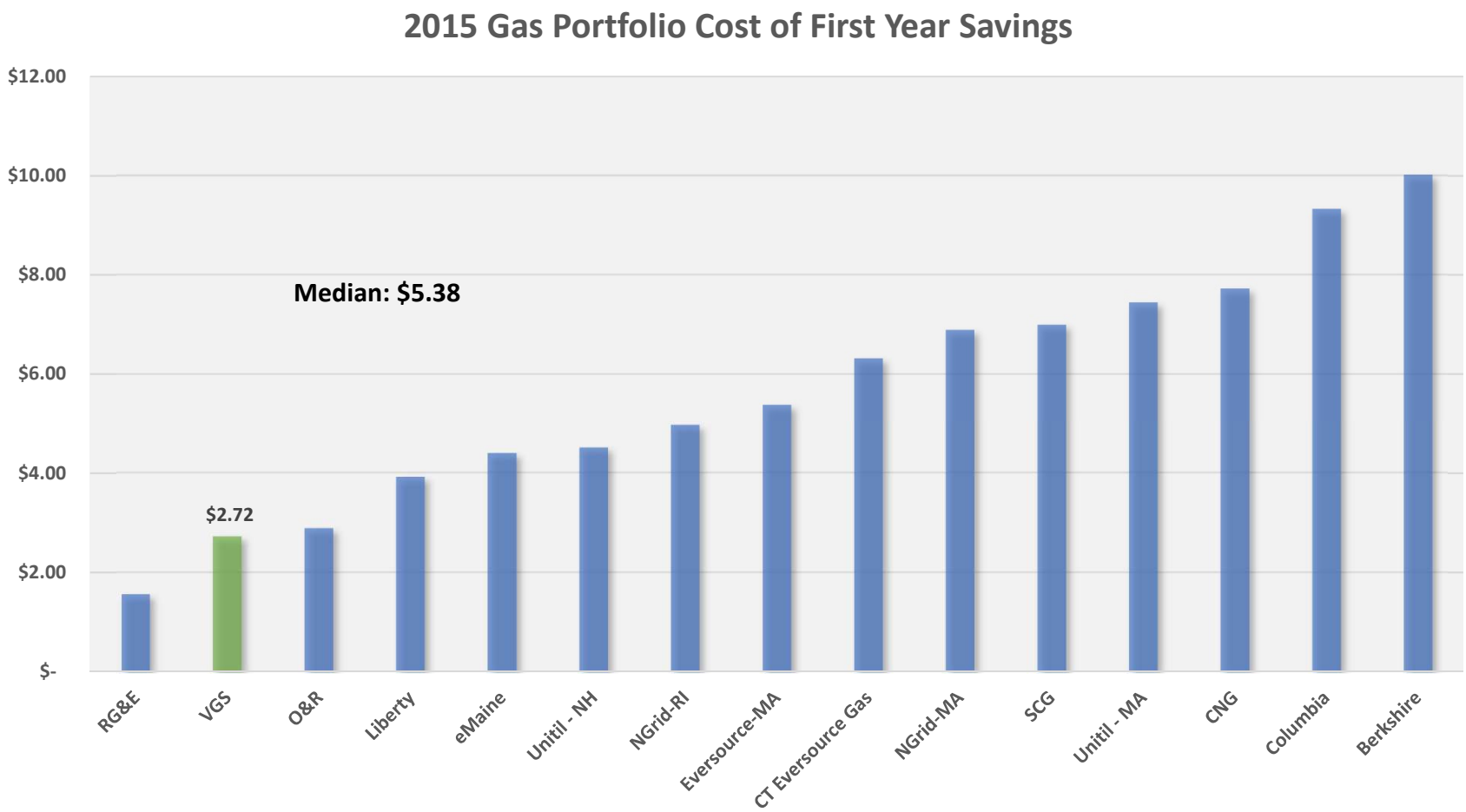
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS's cost of per annual first year therm saved was $2.46/therm, less than the median of the comparison group at $5.22/therm.



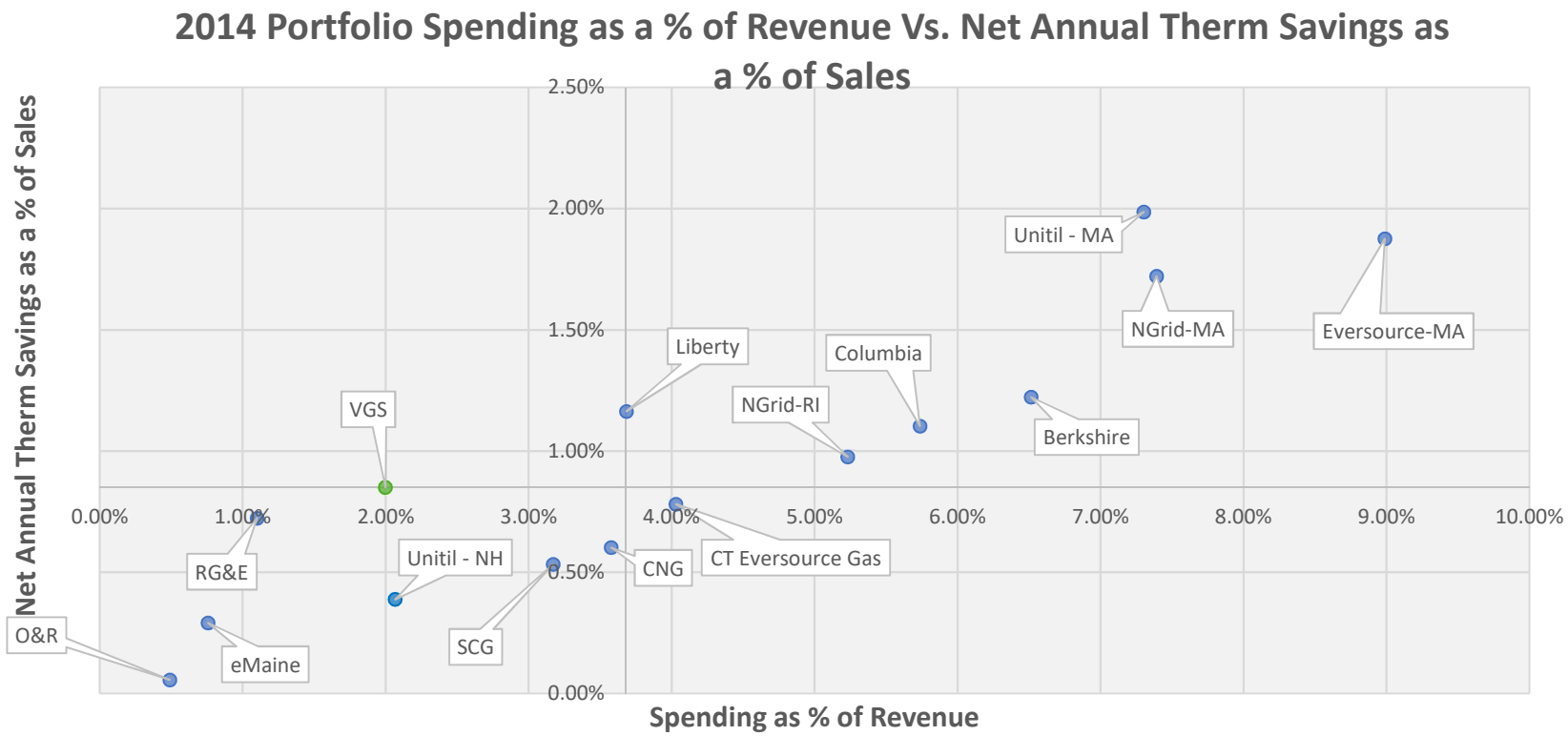
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an baseline for VGS peers during 2014 and 2015.

In 2015, VGS's cost of per annual first year therm saved was $2.72/therm, less than the median of the comparison group at $5.38/therm.



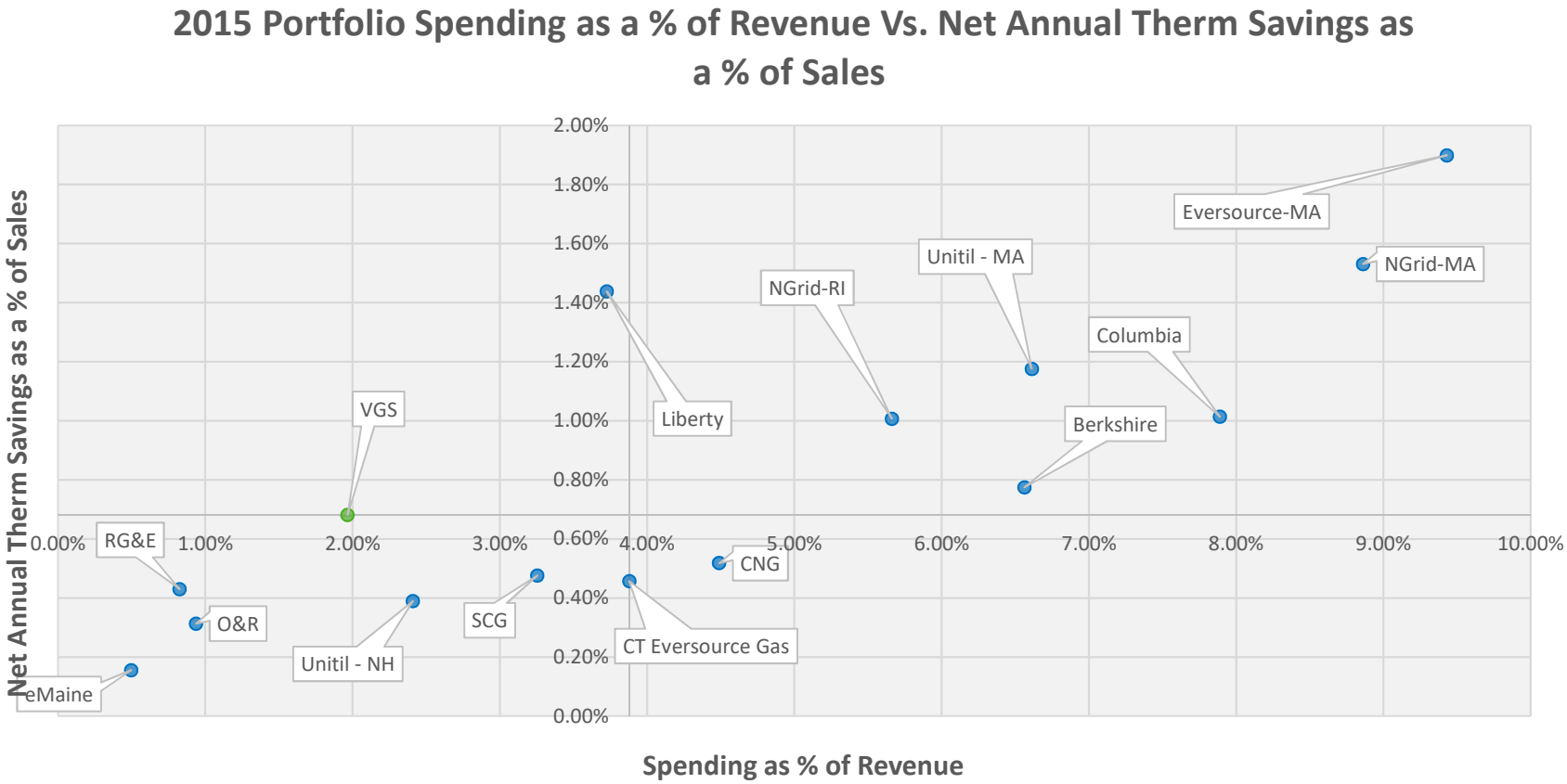
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an baseline for VGS peers during 2014 and 2015.

VGS's 2014 Portfolio savings as a percent of sales was higher than the comparison group's median while its spending as a percent of revenue was lower.



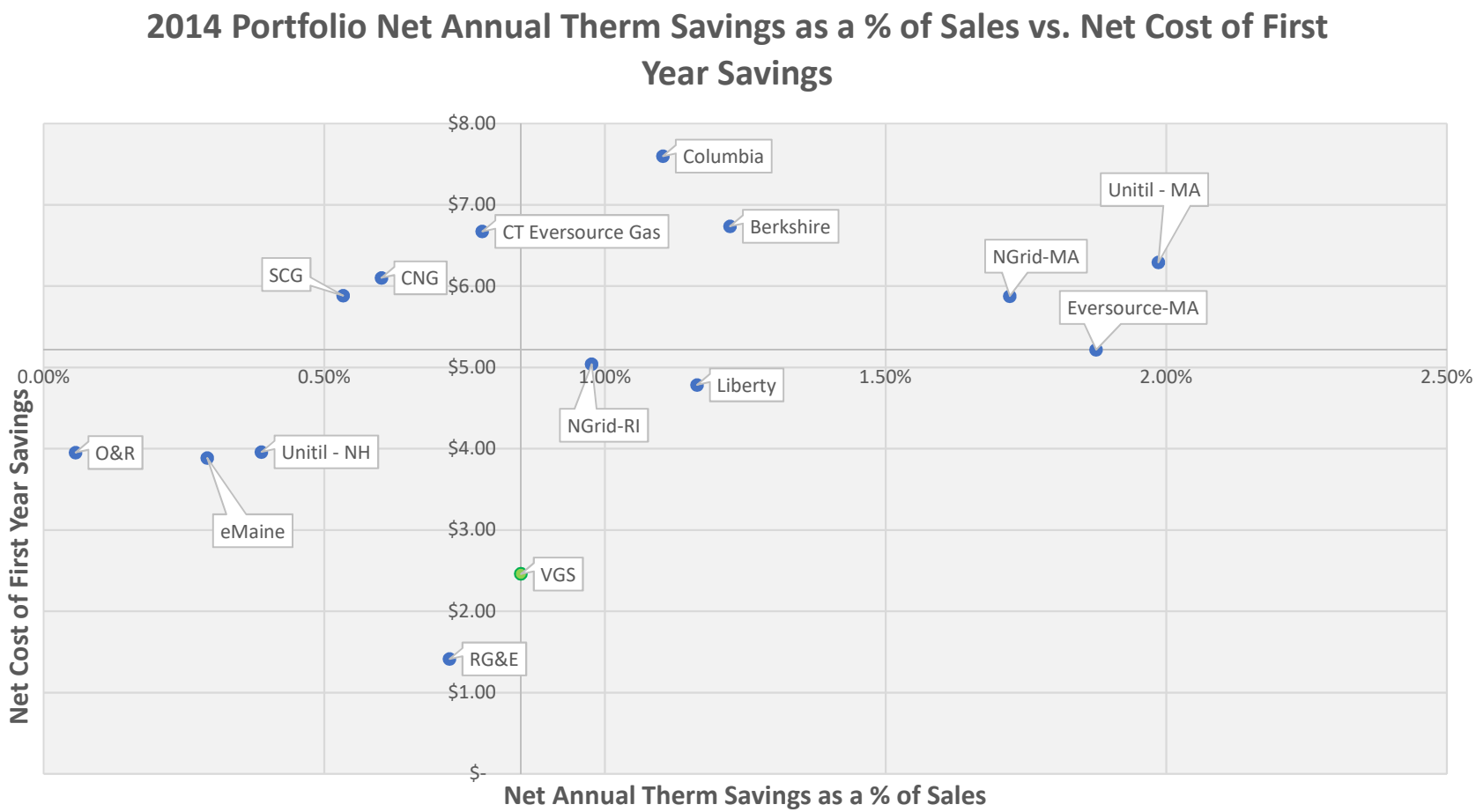
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Portfolio savings as a percent of sales was higher than the comparison group's median while its spending as a percent of revenue was lower.



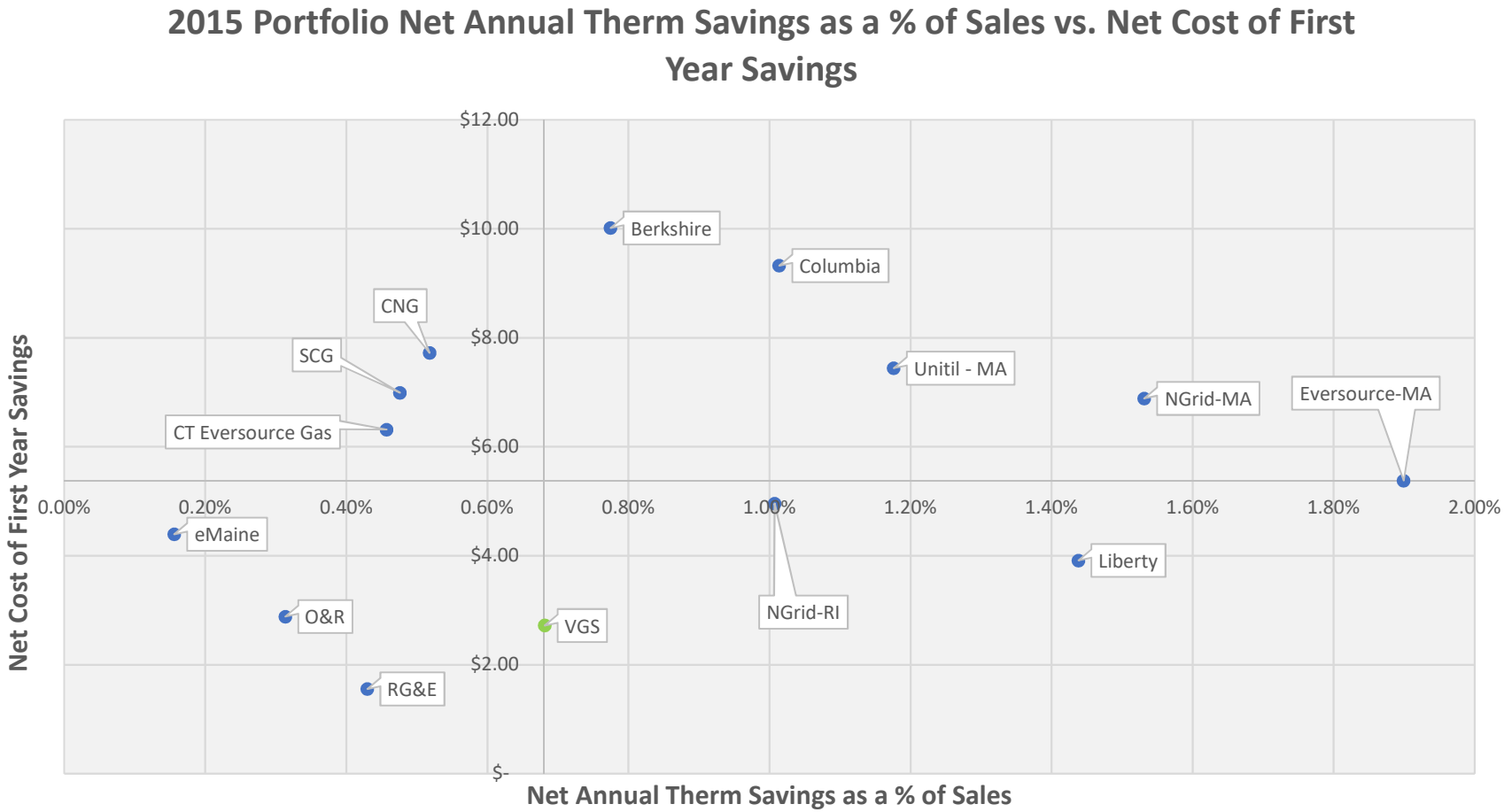
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Portfolio savings as a percent of sales were higher than the comparison group's median and its cost per first year them was lower.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

VGS's 2015 Portfolio savings as a percent of sales was higher than the comparison group's median while its spending as a percent of revenue was lower.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

ENERGY FUTURES GROUP

Section 6:
2014 and 2015 Gas C&I Benchmarking Results

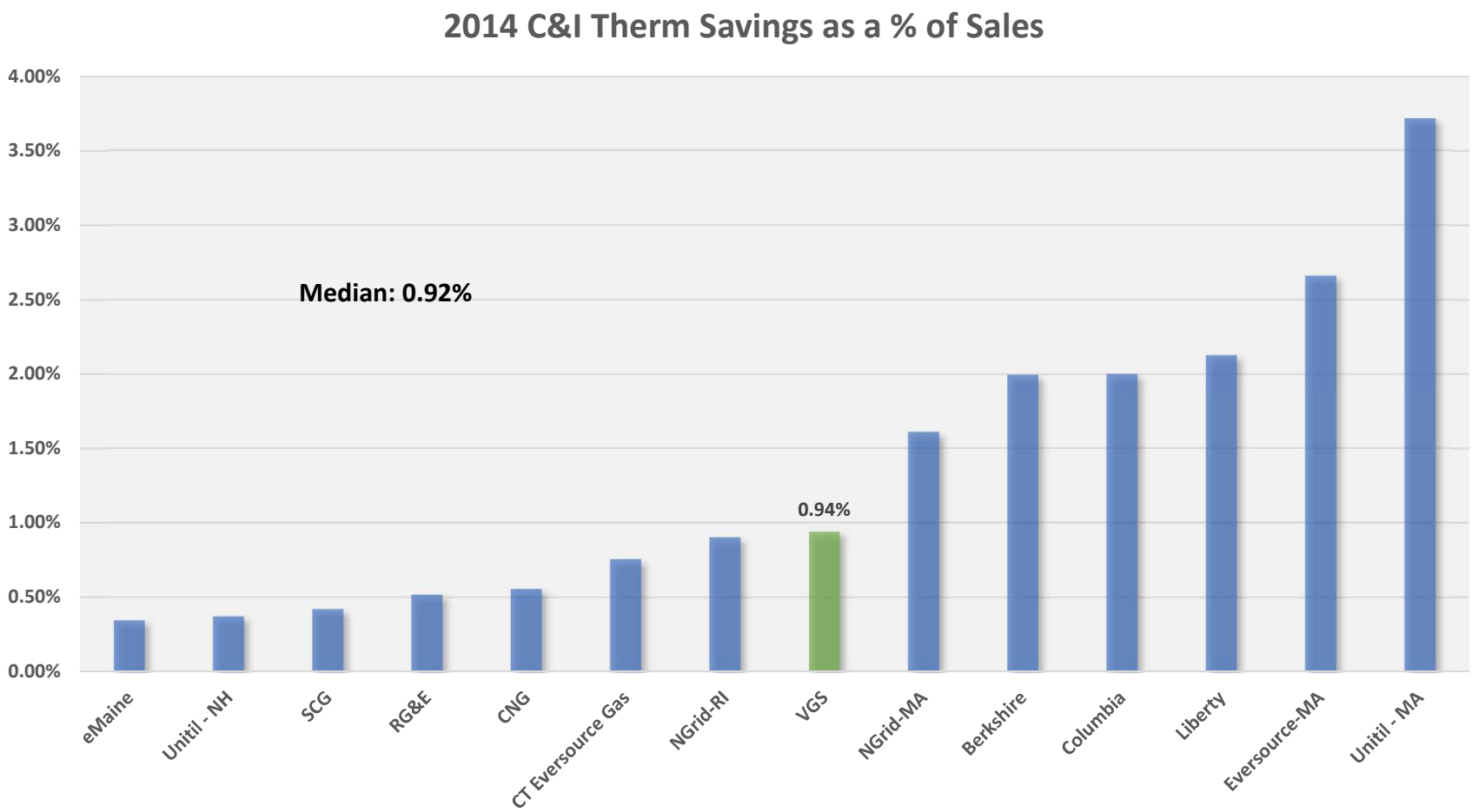
Section 6: 2014 Gas C&I Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	3.9%	0.9%	$0.88	$3.01	$0.26	$0.20
VGS	1.3%	0.9%	$0.82	$1.11	$0.09	$0.07

Section 6: 2015 Gas C&I Benchmarking Results

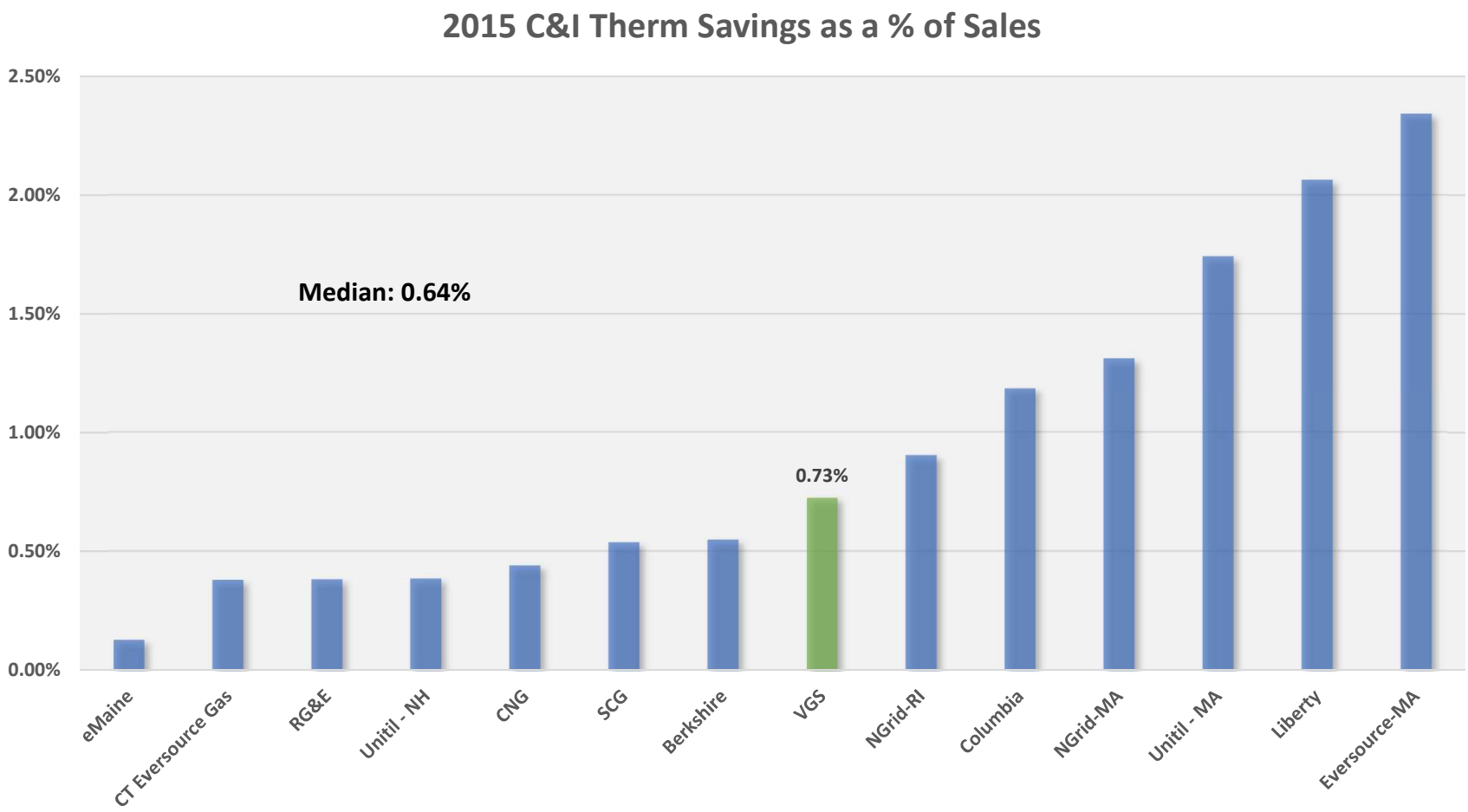
	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	3.3%	0.7%	$0.83	$3.43	$0.35	$0.29
VGS	1.0%	0.6%	$0.71	$0.95	$0.07	$0.05

In 2014, VGS achieved annual savings of 0.94% of C&I sales, slightly higher than the median value of the comparison group at 0.92%.



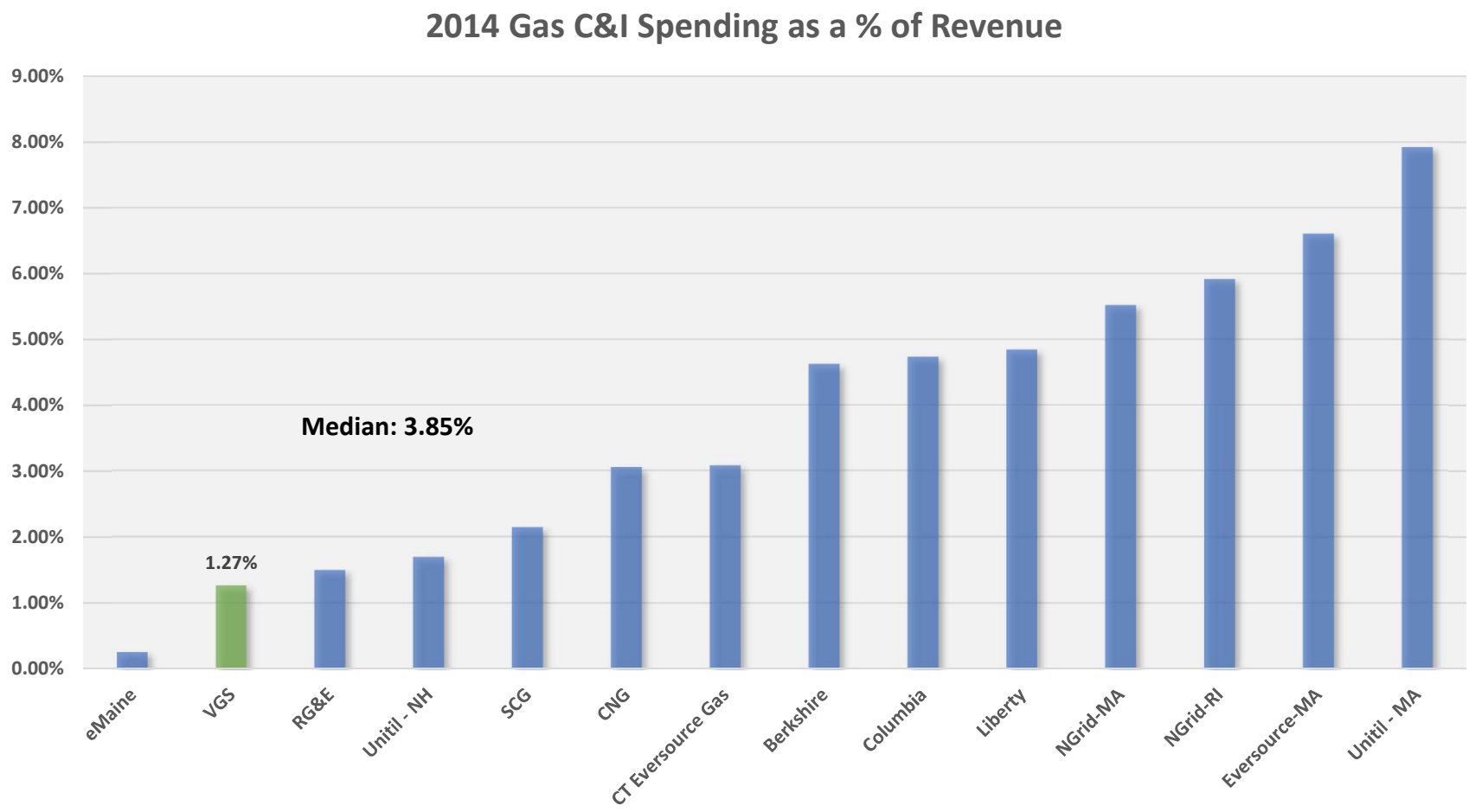
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS achieved annual savings of 0.73% of C&I sales, higher the median value of the comparison group at 0.64%.

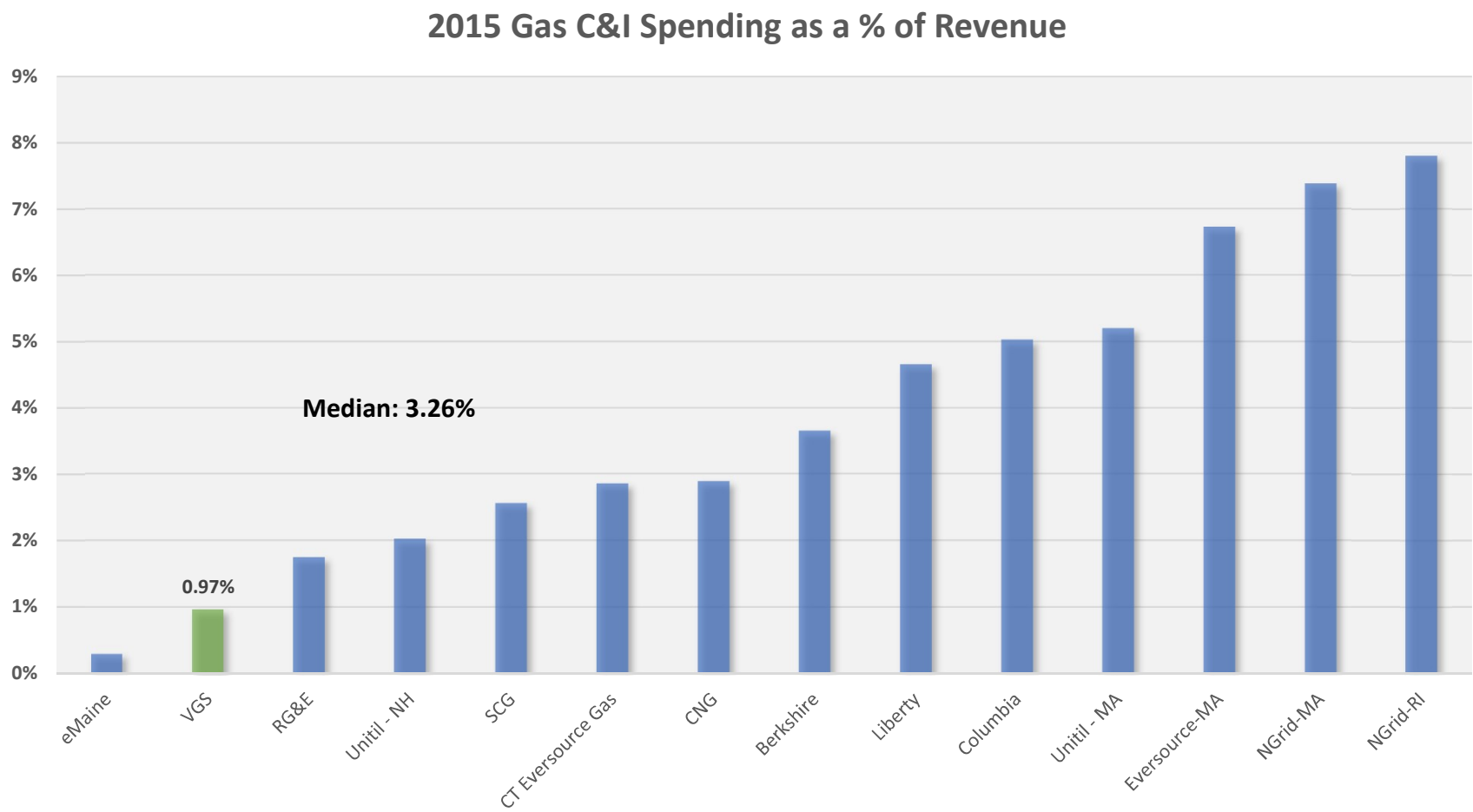


Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

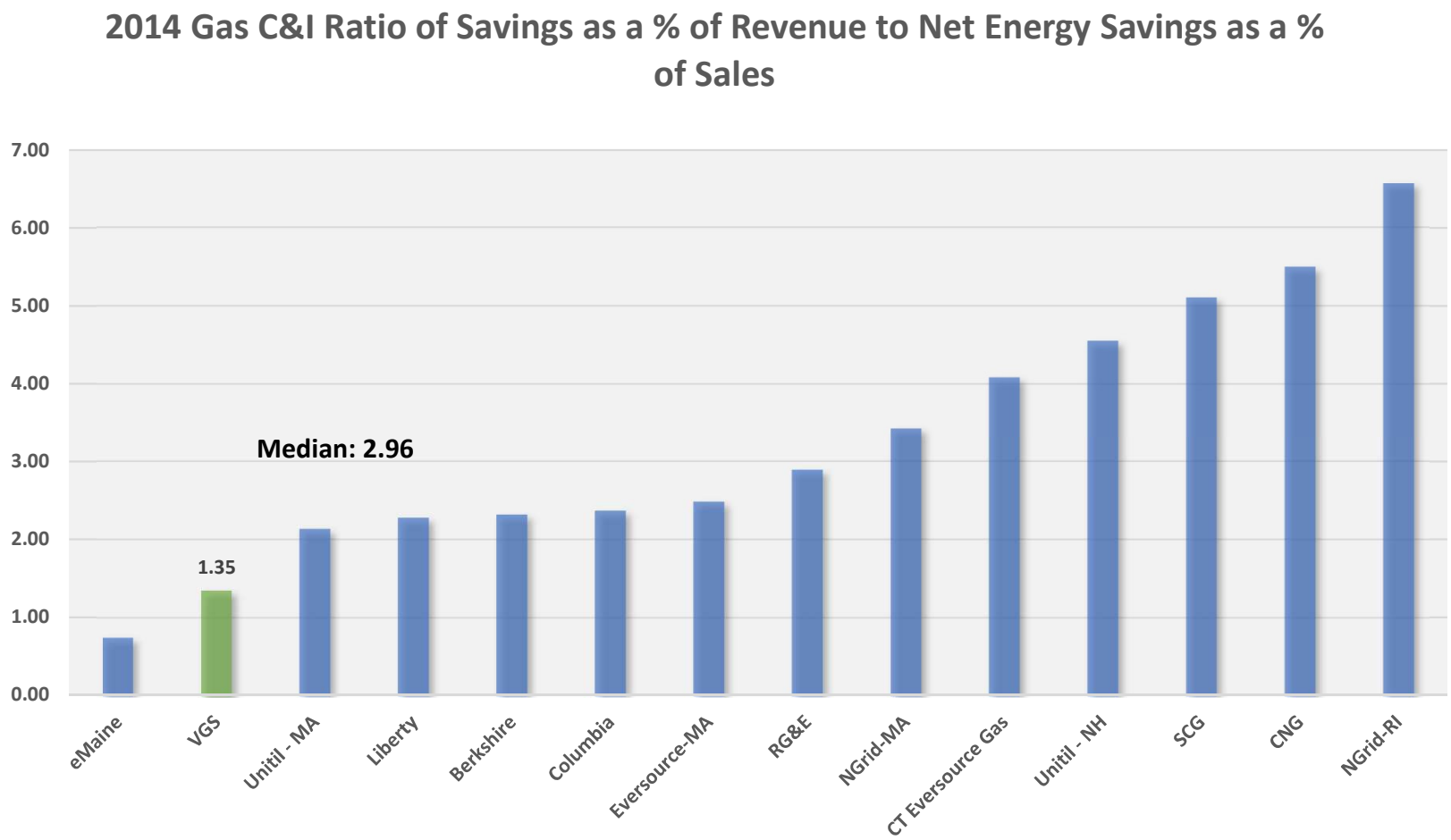
In 2014, VGS spent 1.27% of its C&I revenues on efficiency, lower than the comparison group median of 3.85%.



In 2015, VGS spent 0.97% of its C&I revenues on efficiency, lower than the comparison group median of 3.26%.

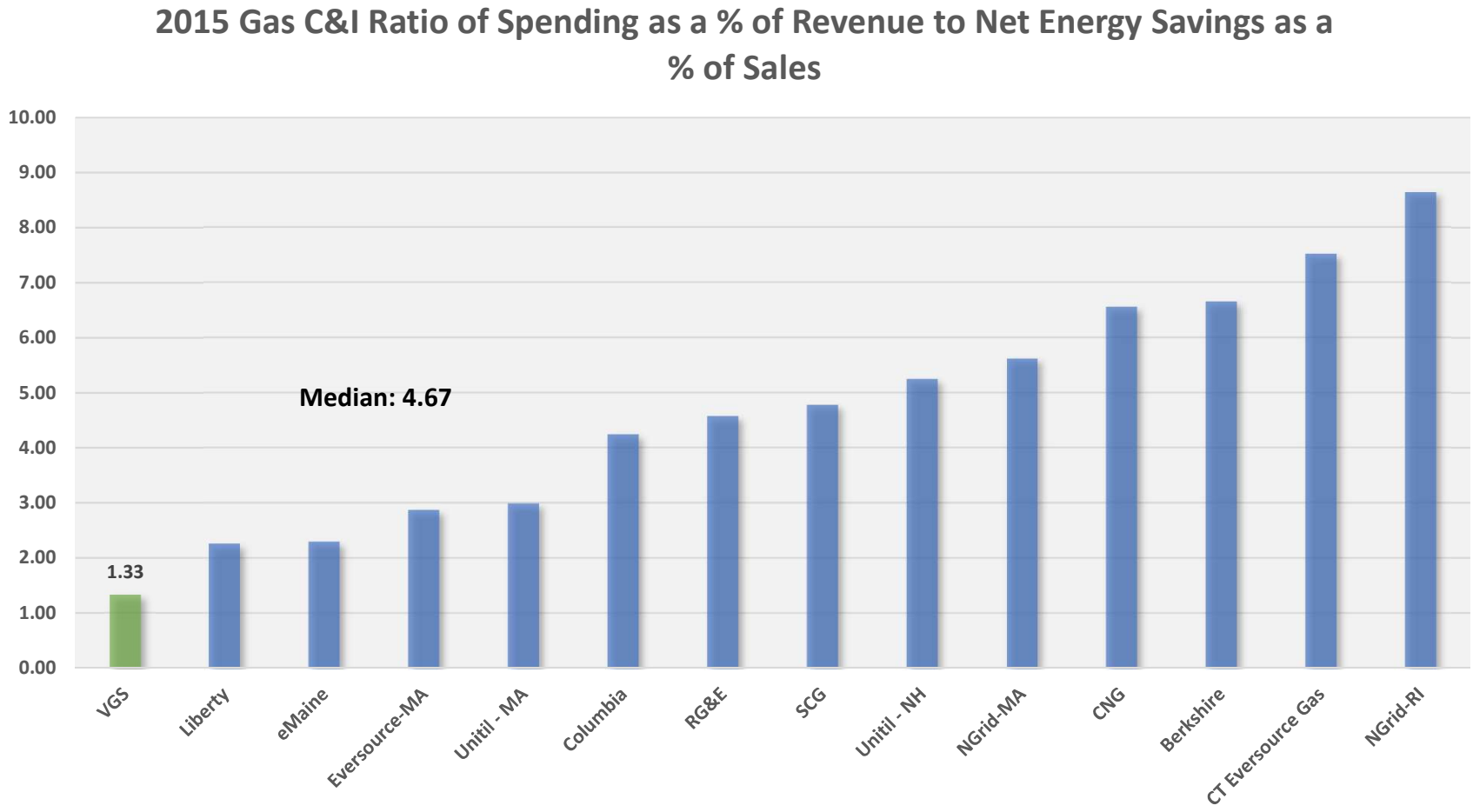


At 1.35, VGS's Portfolio 2014 ratio of spending as a percent of revenue to savings as a percent of sales is lower than the comparison group median of 2.96.



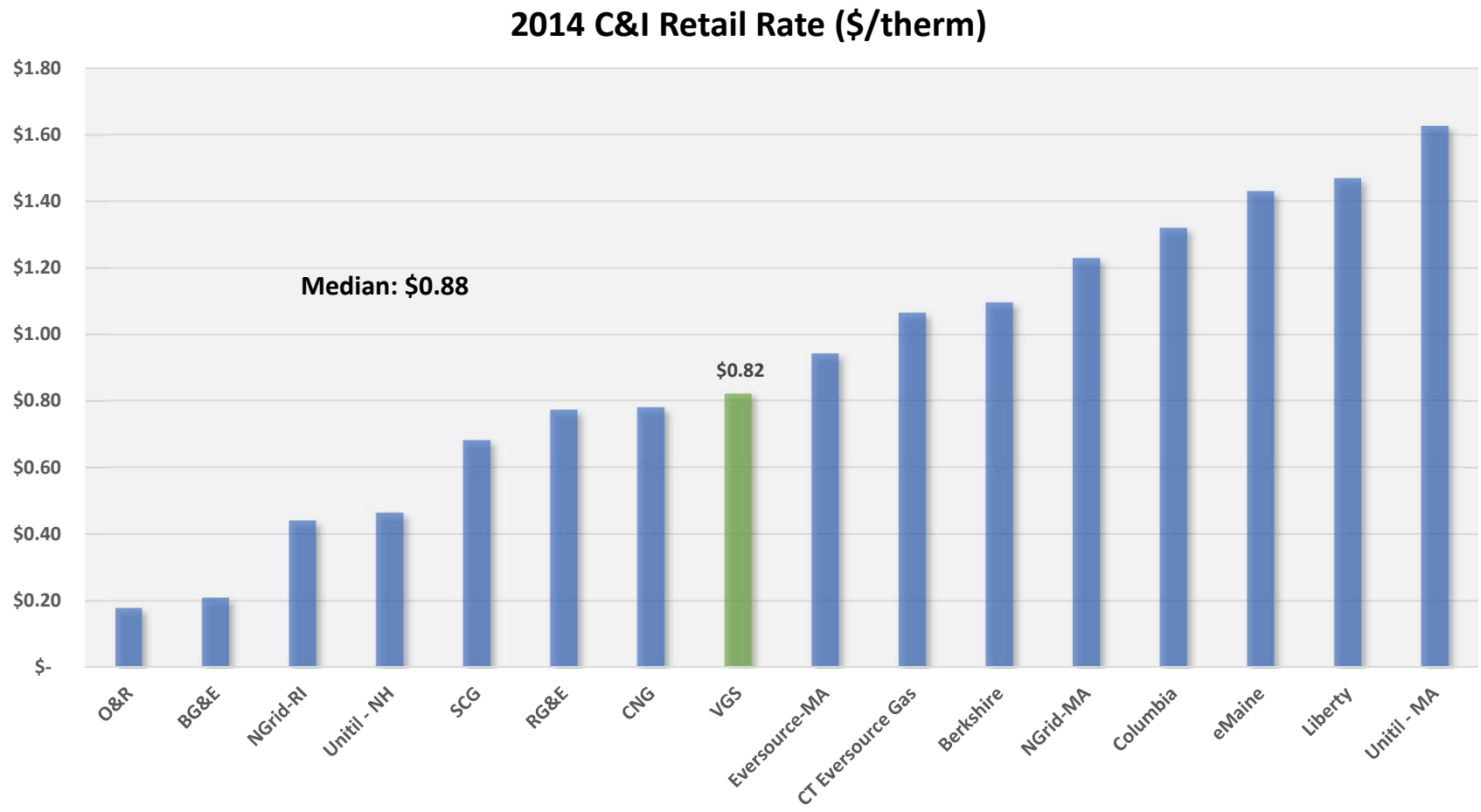
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

At 1.33, VGS's Portfolio 2015 ratio of spending as a percent of revenue to savings as a percent of sales is lower than the comparison group median of 4.67.

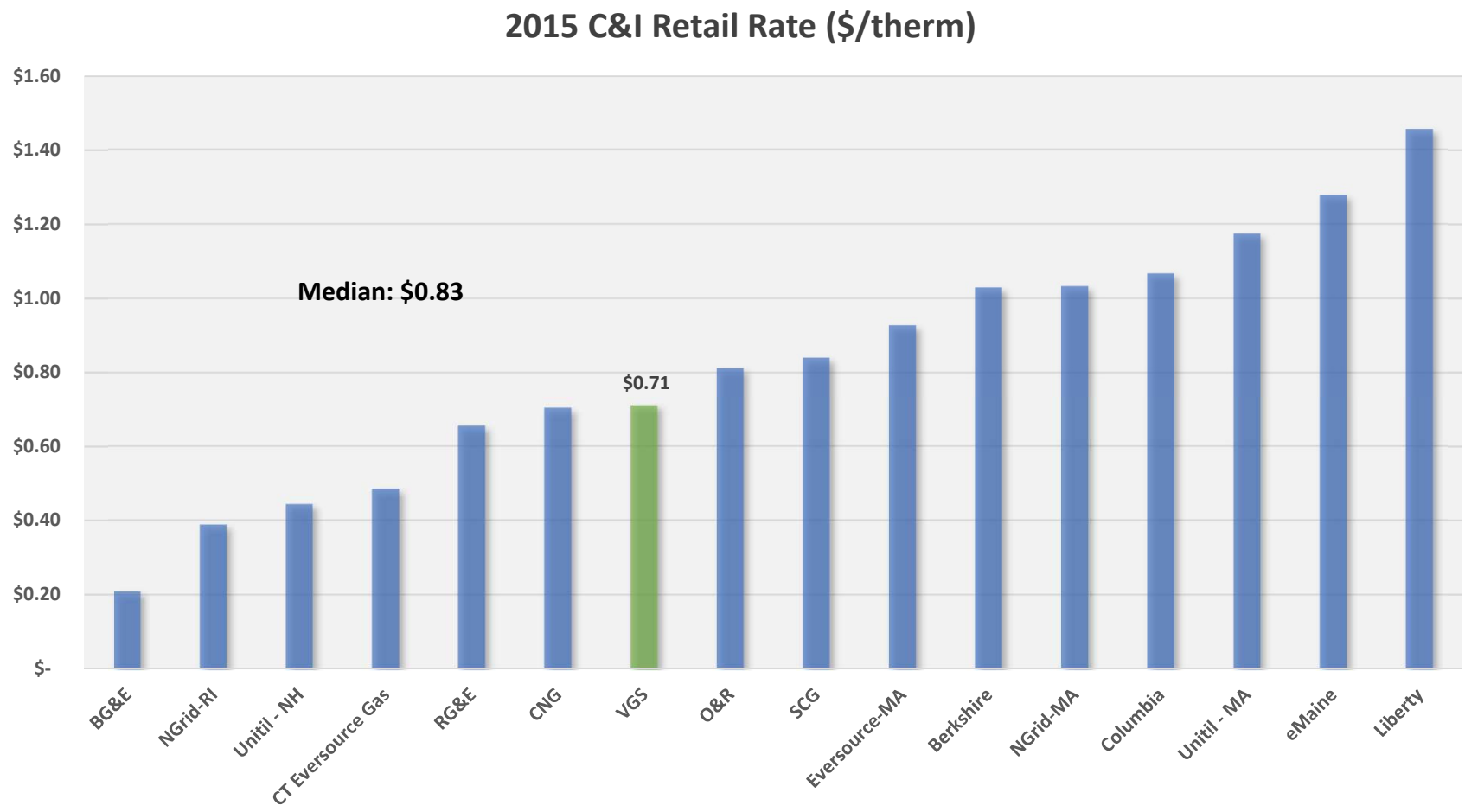


Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

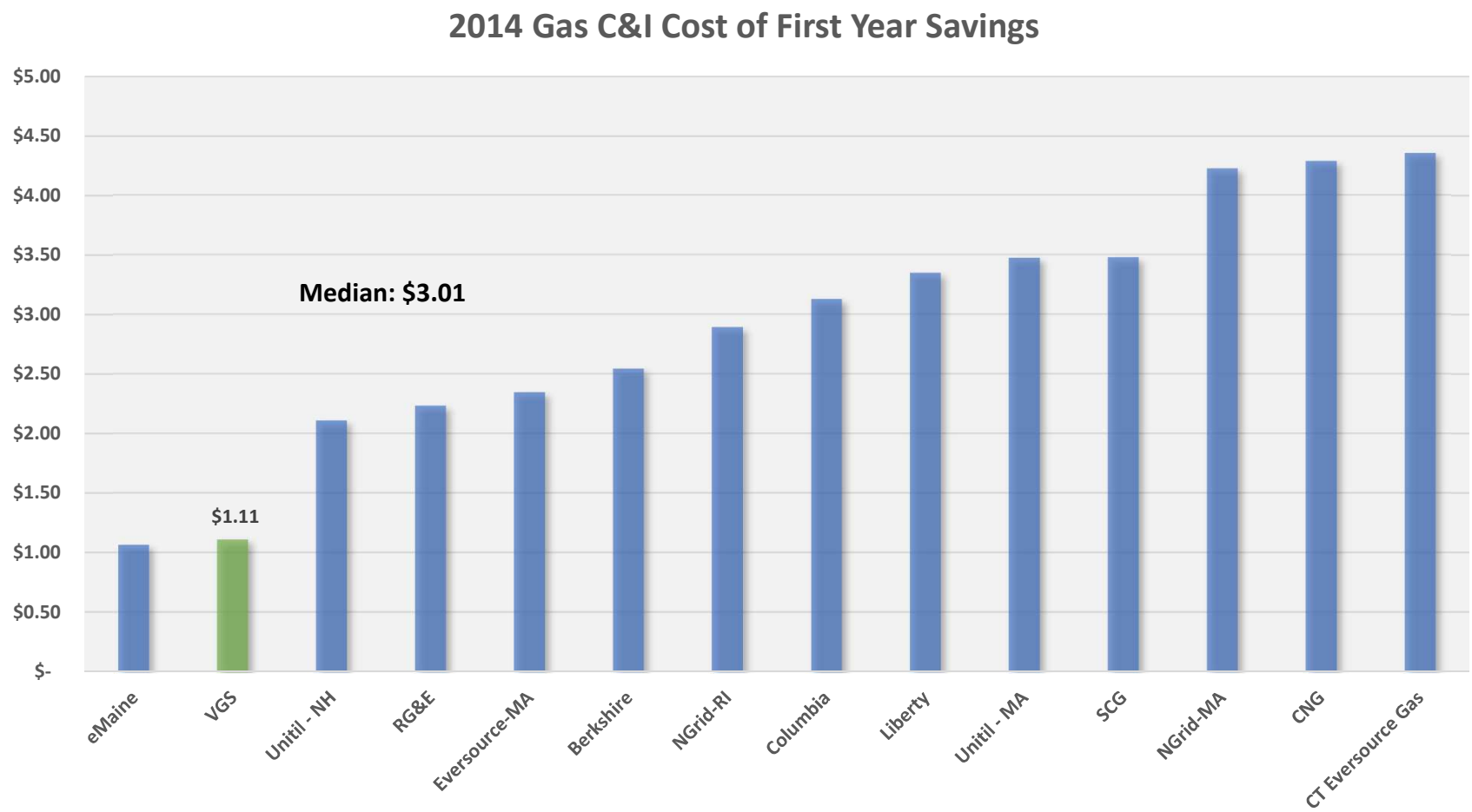
VGS's 2014 average C&I retail rate of $0.82/therm is lower than the comparison group's median value of $0.88/therm.



VGS's 2015 average C&I retail rate of $0.71/therm is lower than the comparison group's median value of $0.83/therm.

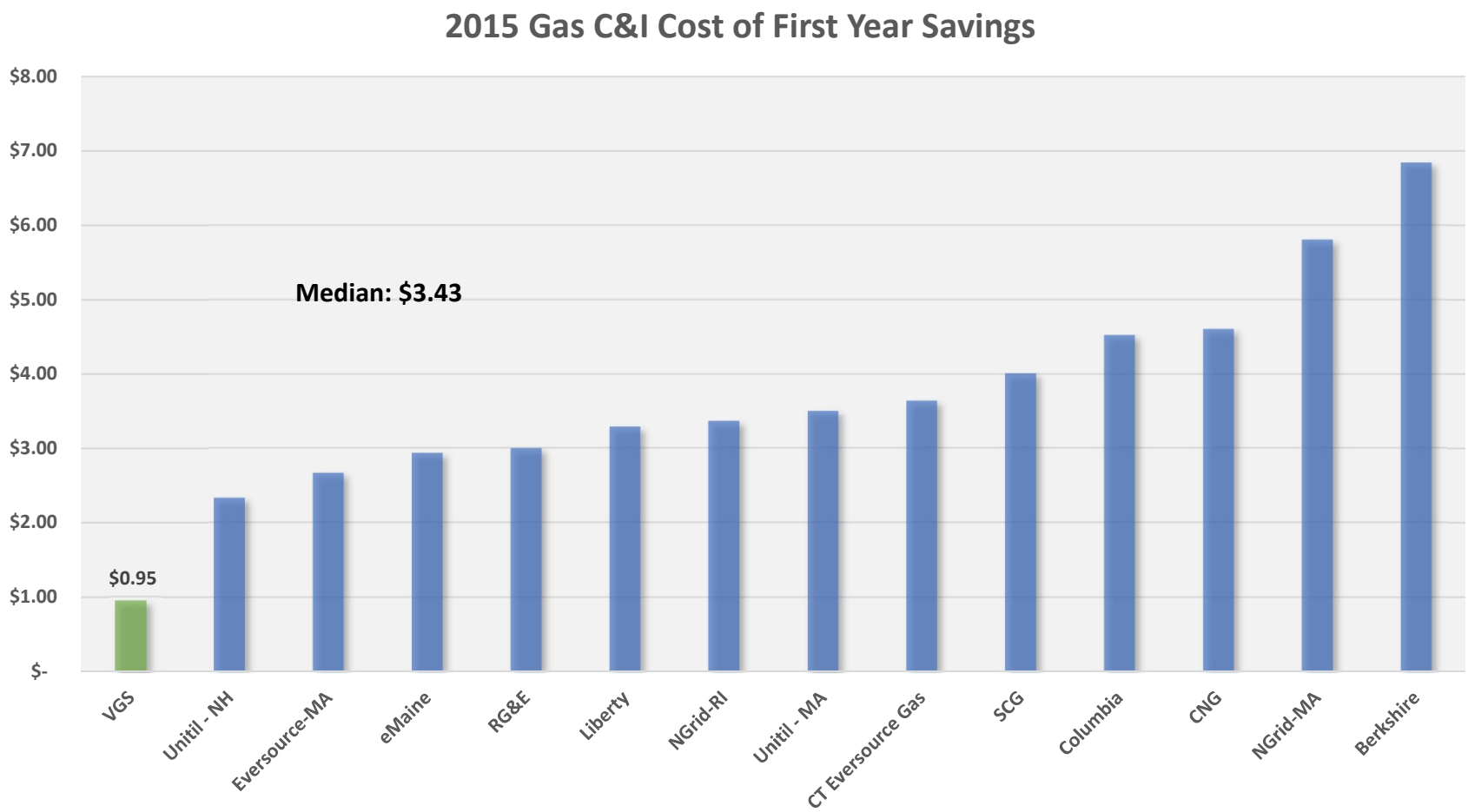


VGS's 2014 C&I cost of first year savings was $1.11/therm, less than the $3.01/therm of the comparison group.



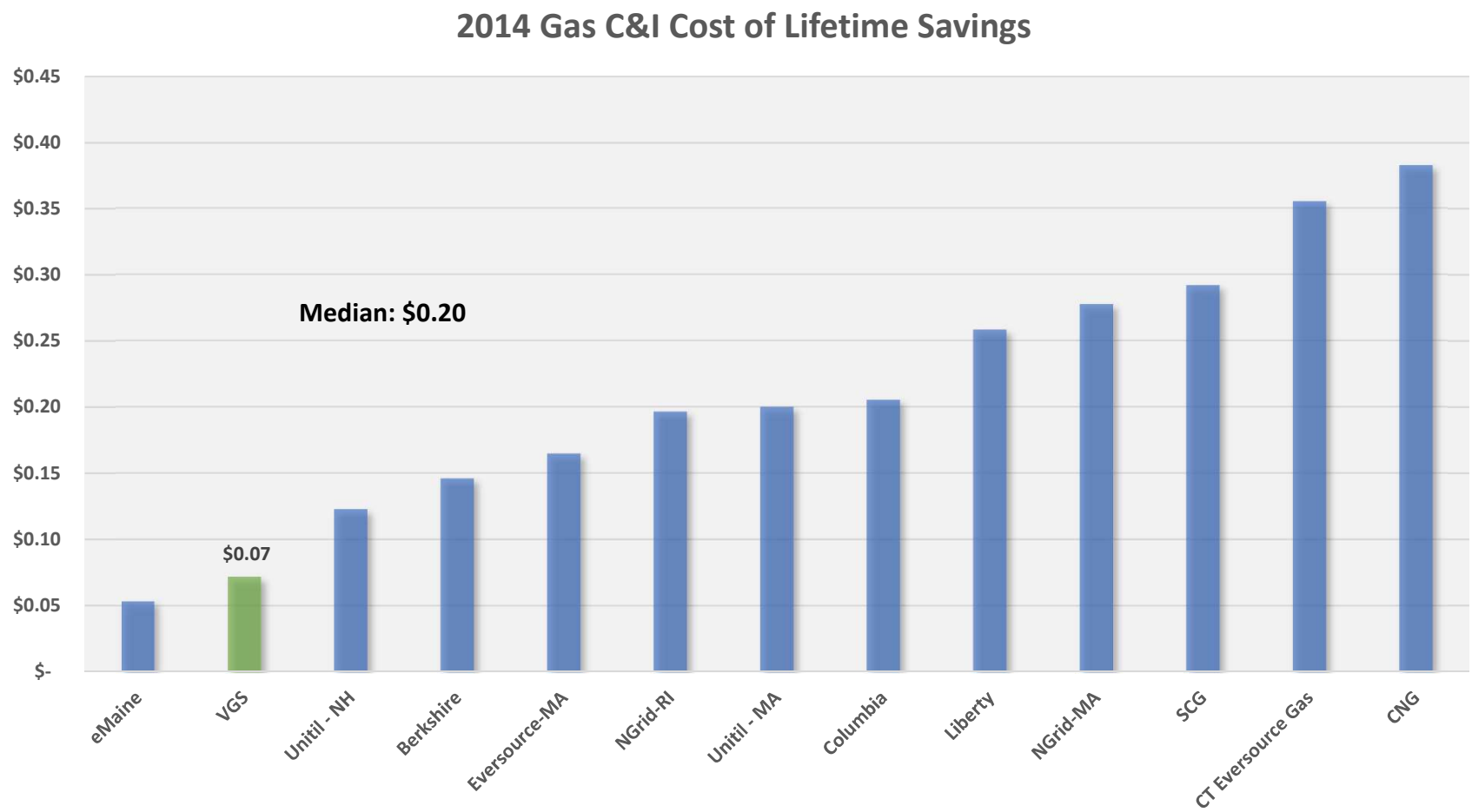
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 C&I cost of first year savings was $0.95/therm, less than the $3.43/therm of the comparison group.



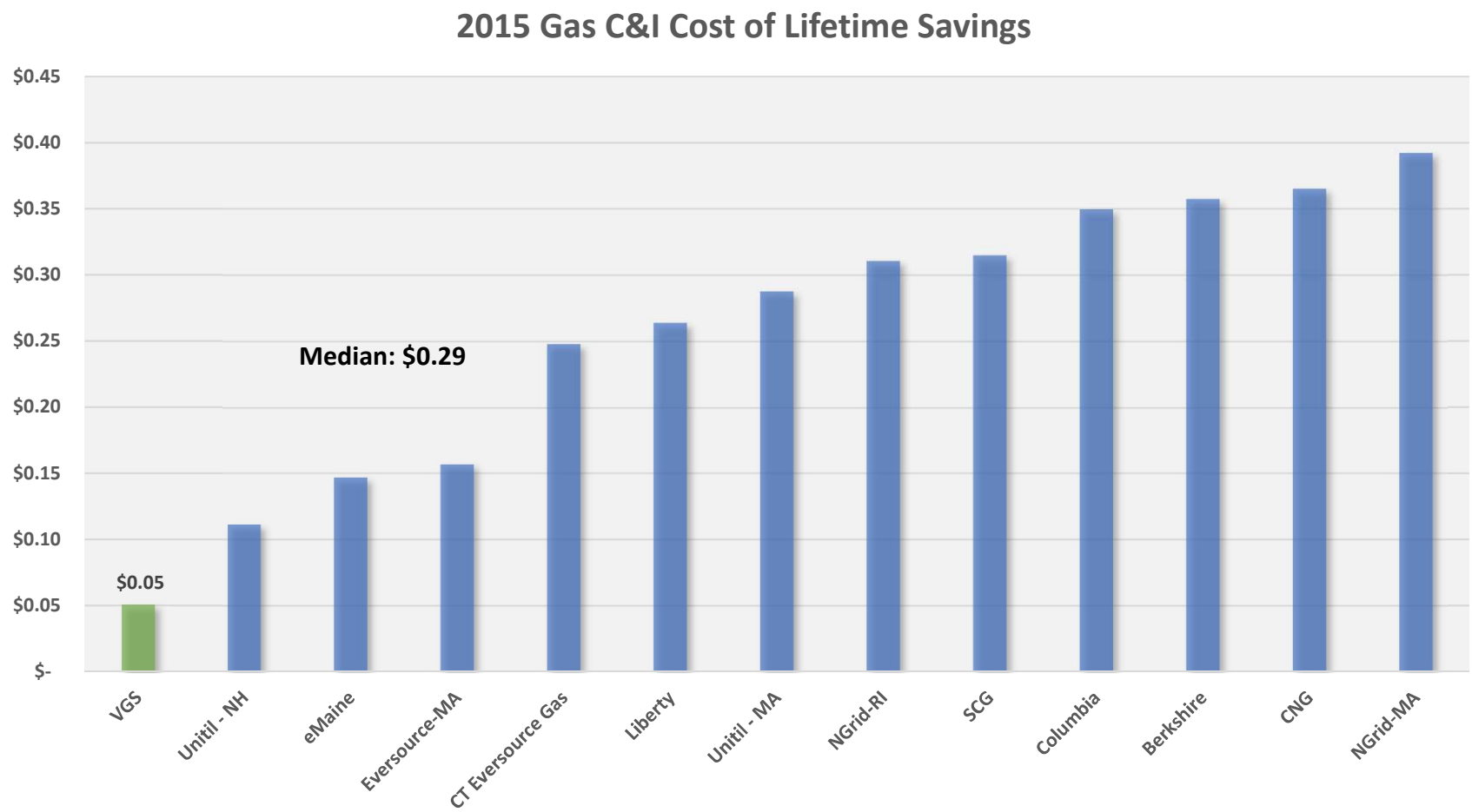
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 C&I lifetime cost of saved energy is $0.07/therm, less than the $0.20/therm comparison group median value.



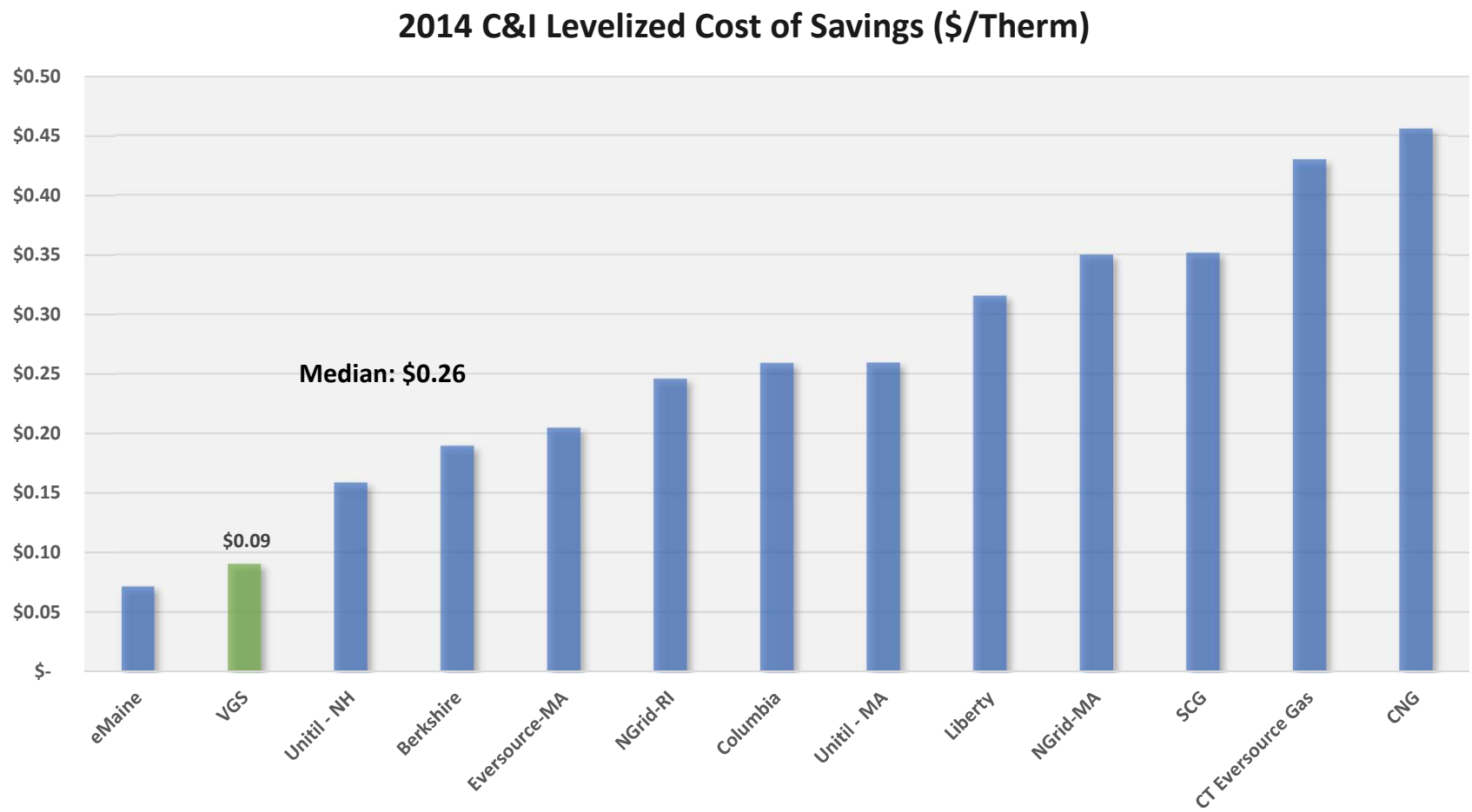
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 C&I lifetime cost of saved energy is $0.05/therm, less than the $0.29/therm comparison group median value.



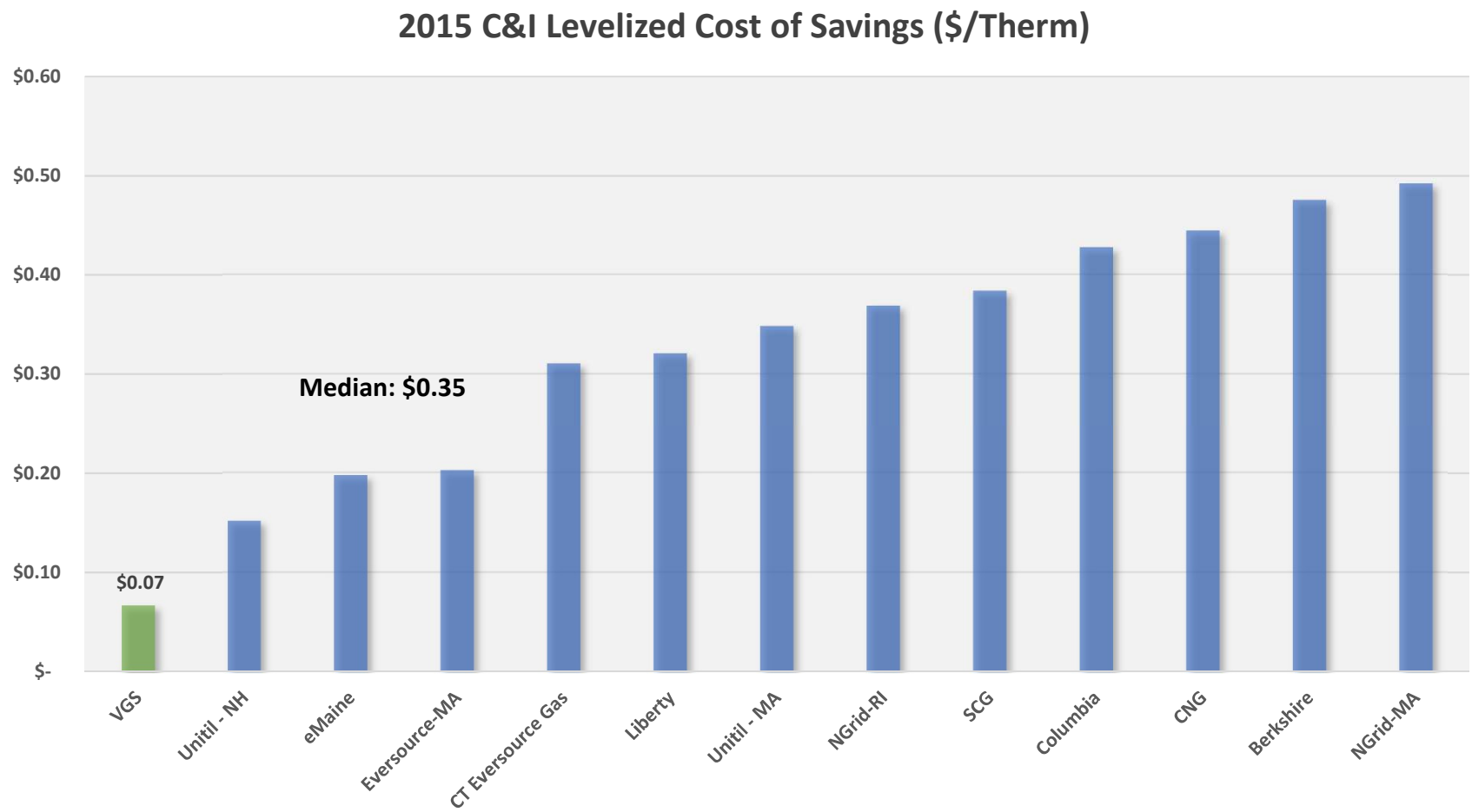
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 C&I levelized cost of saved energy is $0.09/therm, less than the $0.26/therm comparison group median value.



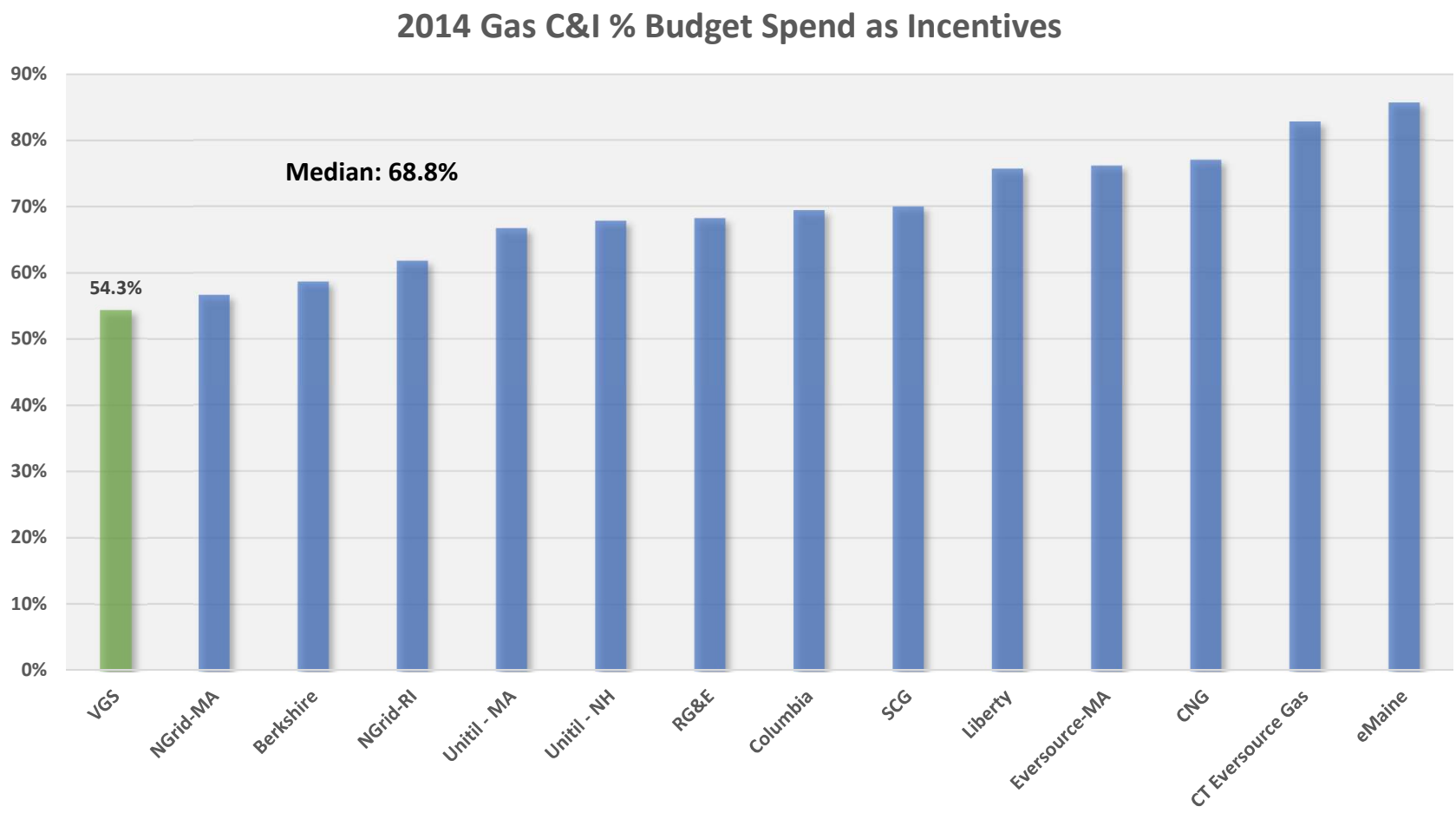
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 C&I levelized cost of saved energy is $0.07/therm, less than the $0.35/therm comparison group median value.



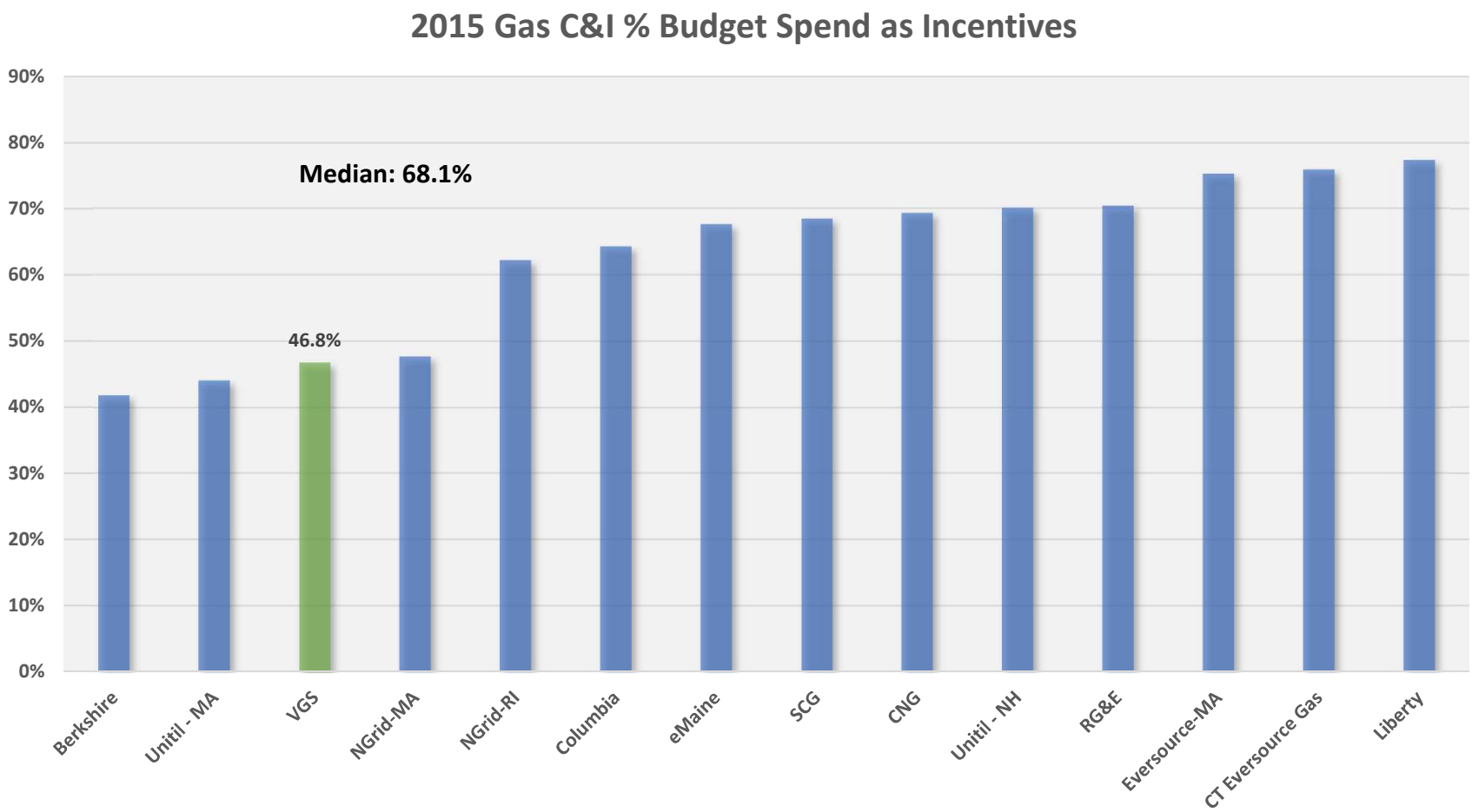
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014 VGS spent 54.3% of its C&I budget on incentives, less than the comparison group median of 68.8%.



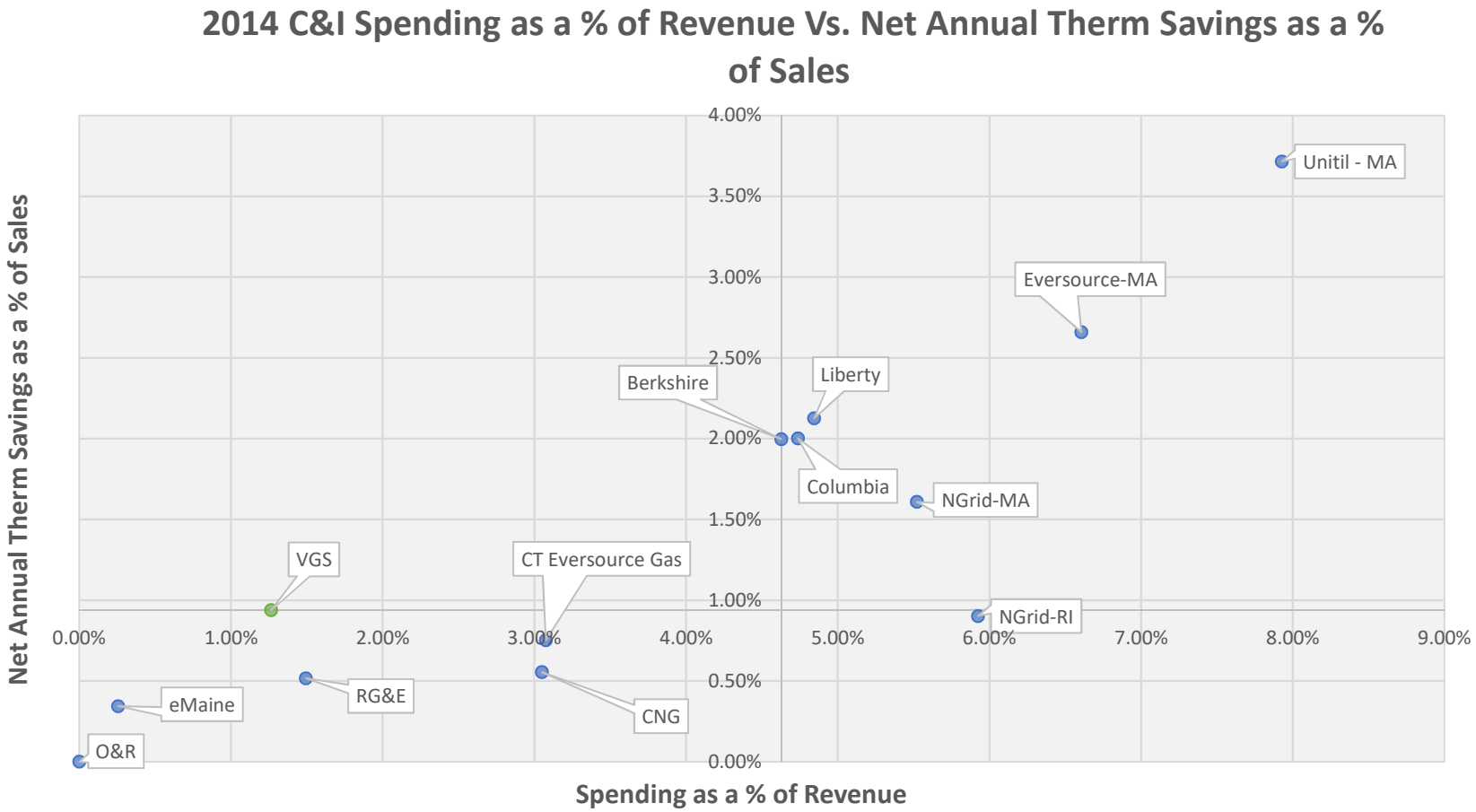
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015 VGS spent 46.8% of its C&I budget on incentives, less than the comparison group median of 68.1%.



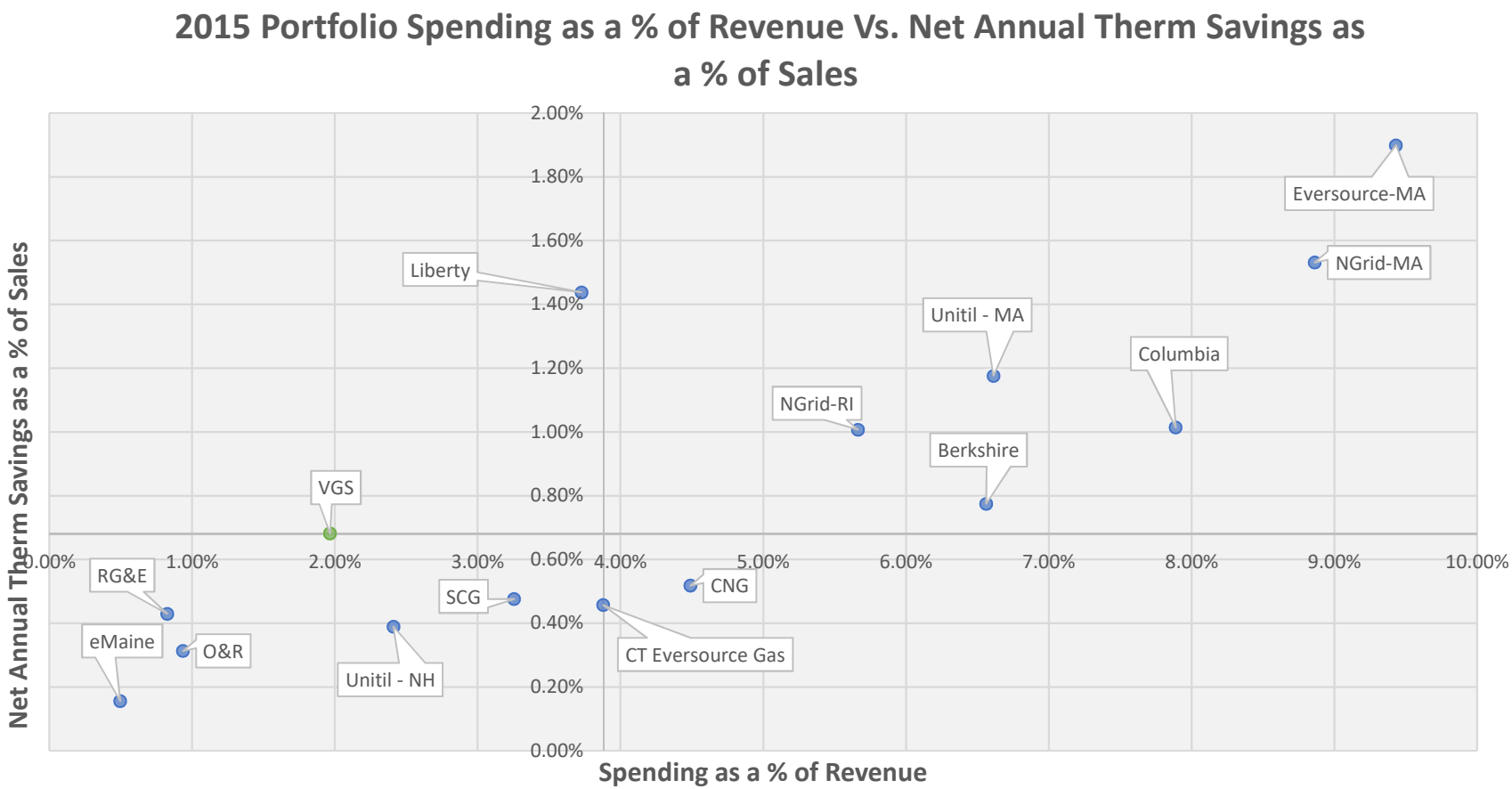
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS achieved C&I savings as a percent of sales above the comparison group median, while spending as a percent of revenue was below the group median.



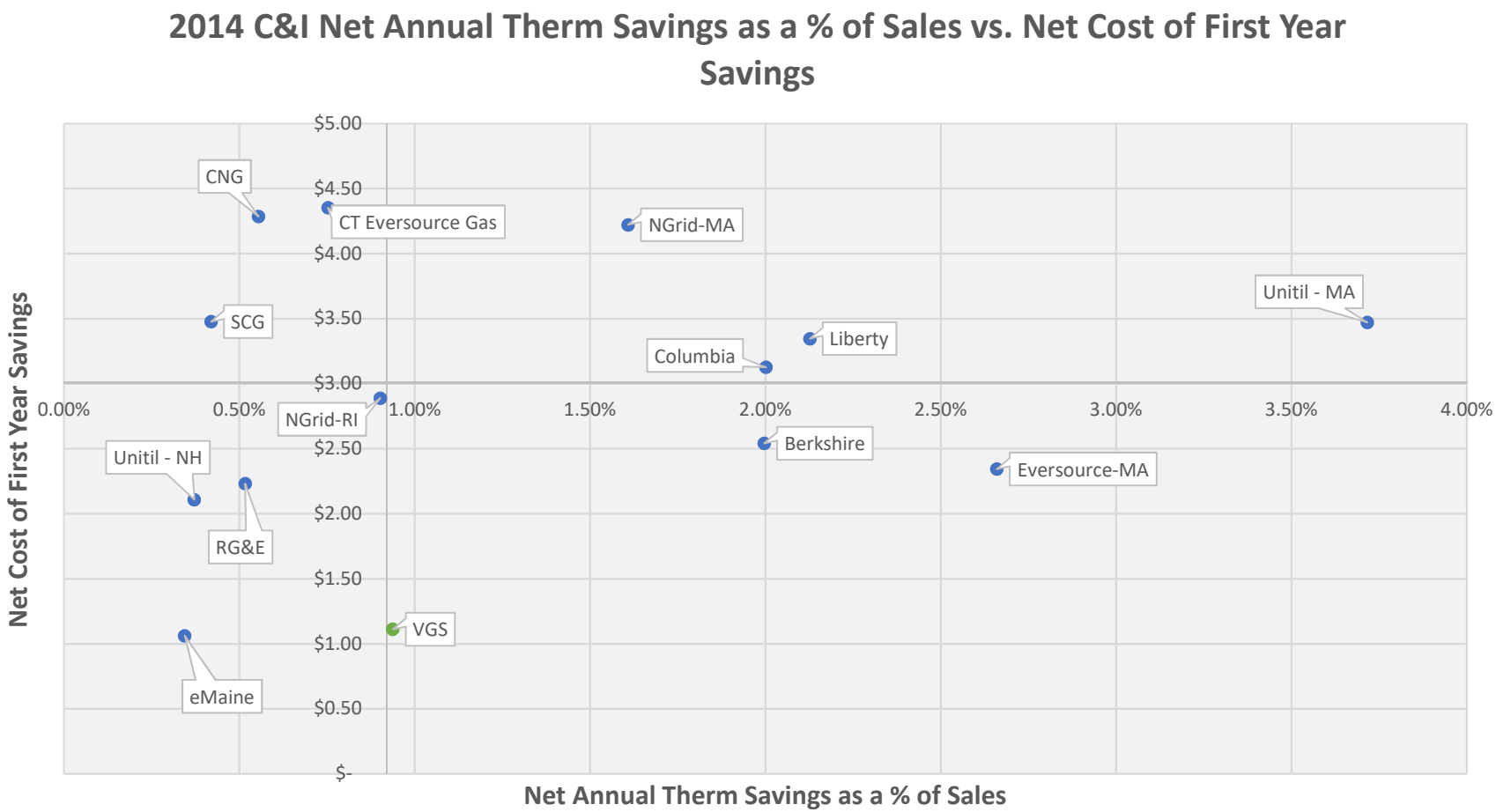
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS achieved C&I savings as a percent of sales above the comparison group median, while spending as a percent of revenue was below the group median.



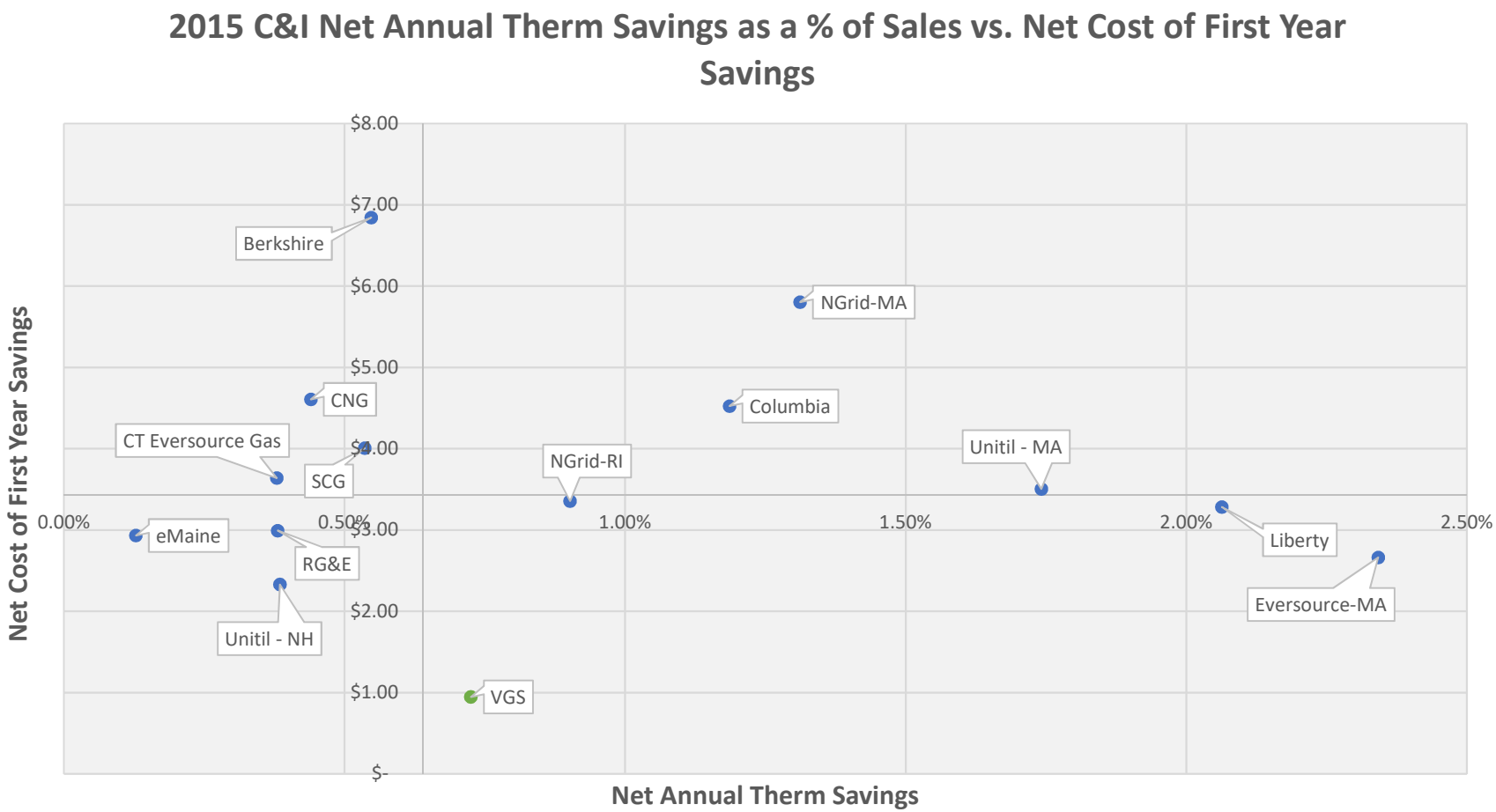
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

VGS's 2014 C&I savings as a percent of sales were higher than the comparison group's median and its cost per first year therm saved was lower.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 C&I savings as a percent of sales were higher than the comparison group's median and its cost per first year cost per therm saved was lower.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

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Section 7:
2014 and 2015 Gas Residential Benchmarking Results

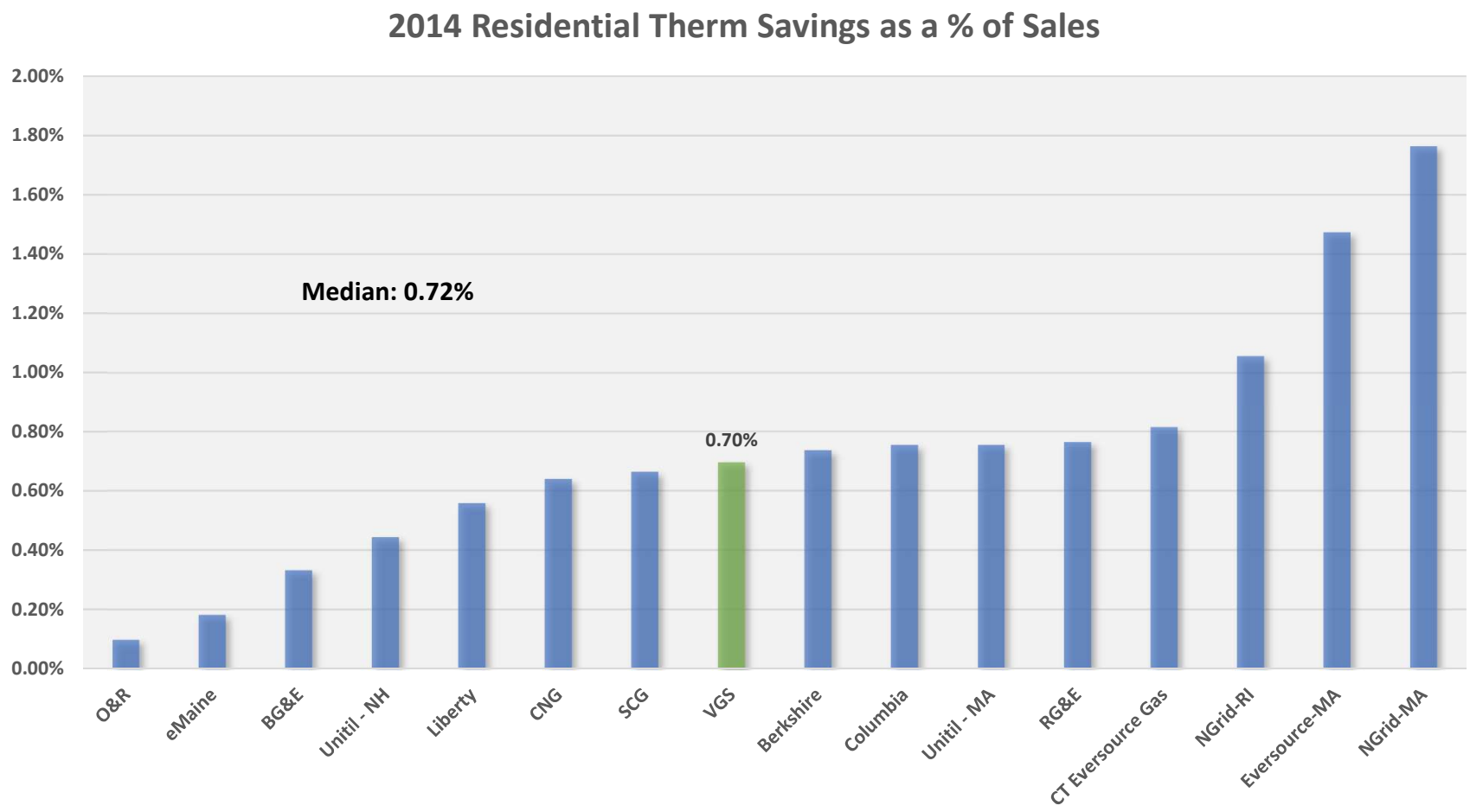
Section 7: 2014 Gas Residential Benchmarking Results

	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	3.9%	0.7%	$1.43	$7.87	$0.63	$0.49
VGS	2.7%	0.7%	$1.43	$5.63	$0.38	$0.29

Section 7: 2015 Gas Residential Benchmarking Results

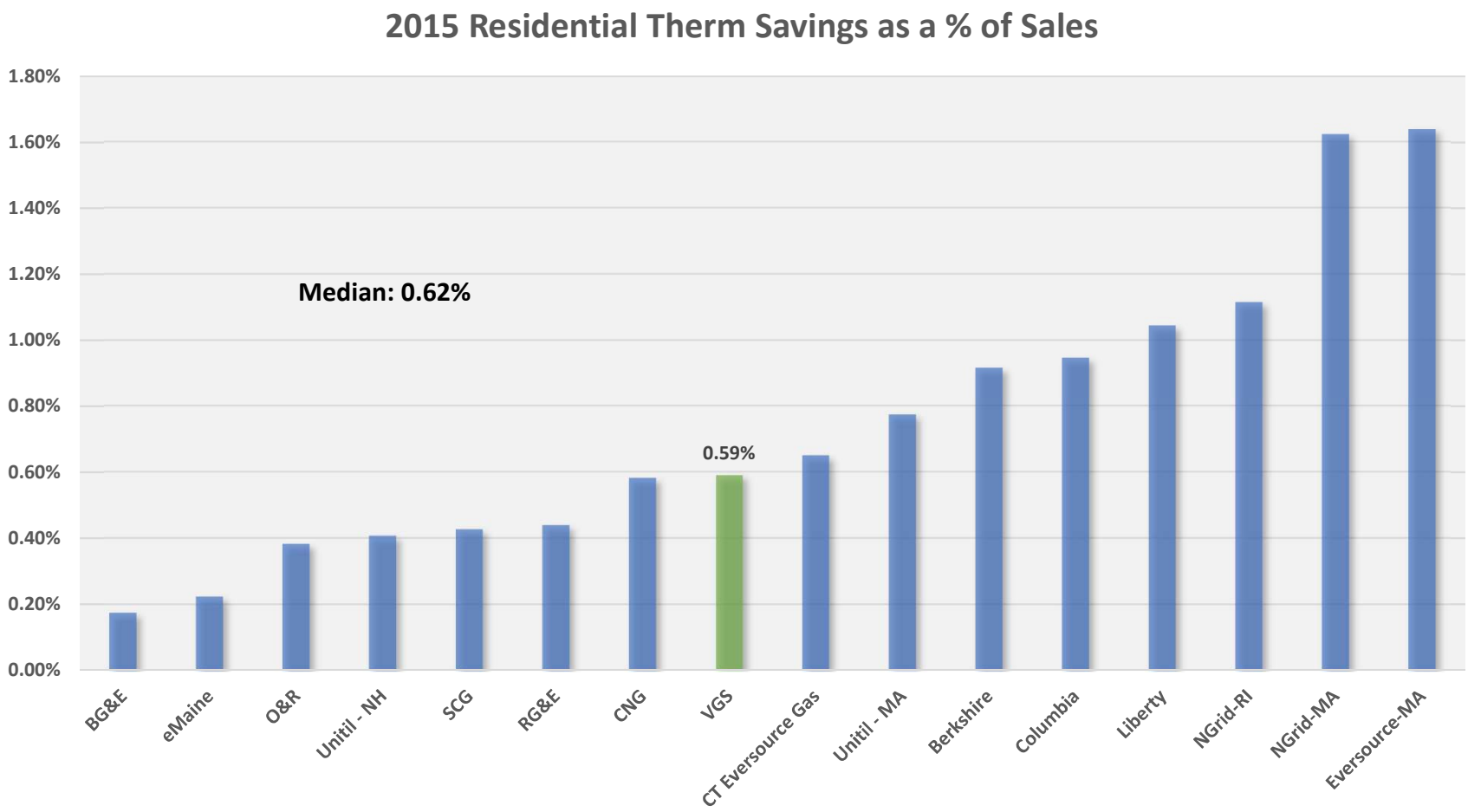
	Spending as % of Revenue	Energy Savings as % of Sales	Retail Cost of Energy $/Therm	Cost of First Year Savings $/Annual therm	Levelized Cost of Energy Savings $/Therm	Cost of Lifetime Savings $/Therm
All Benchmarked Median	4.8%	0.6%	$1.27	$7.66	$0.67	$0.50
VGS	3.0%	0.6%	$1.42	$7.24	$0.48	$0.36

In 2014, VGS's Residential savings were 0.70% of sector sales, slightly less than the comparison group median of 0.72%.



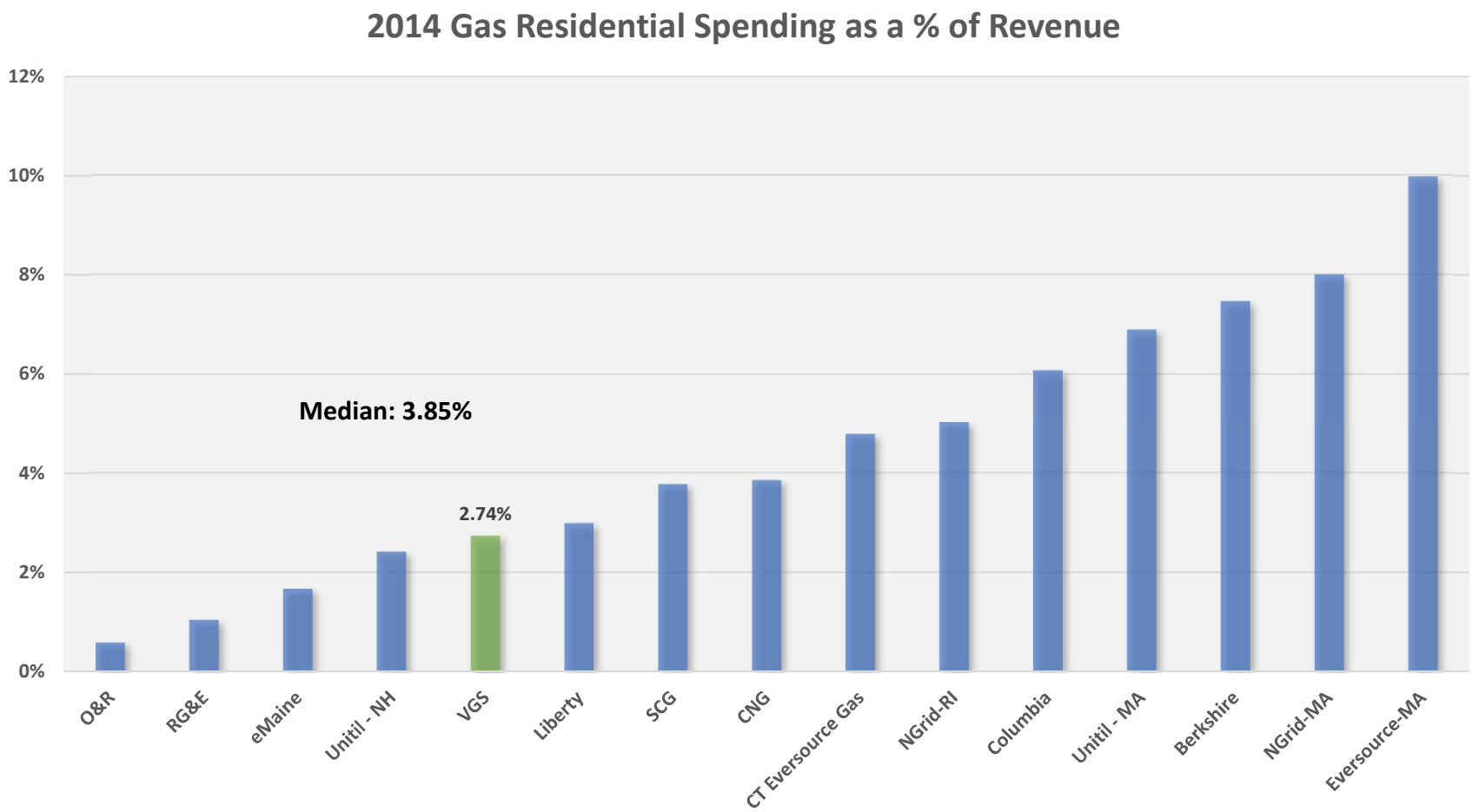
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS's Residential savings were 0.59% of sector sales, less than the comparison group median of 0.62%.



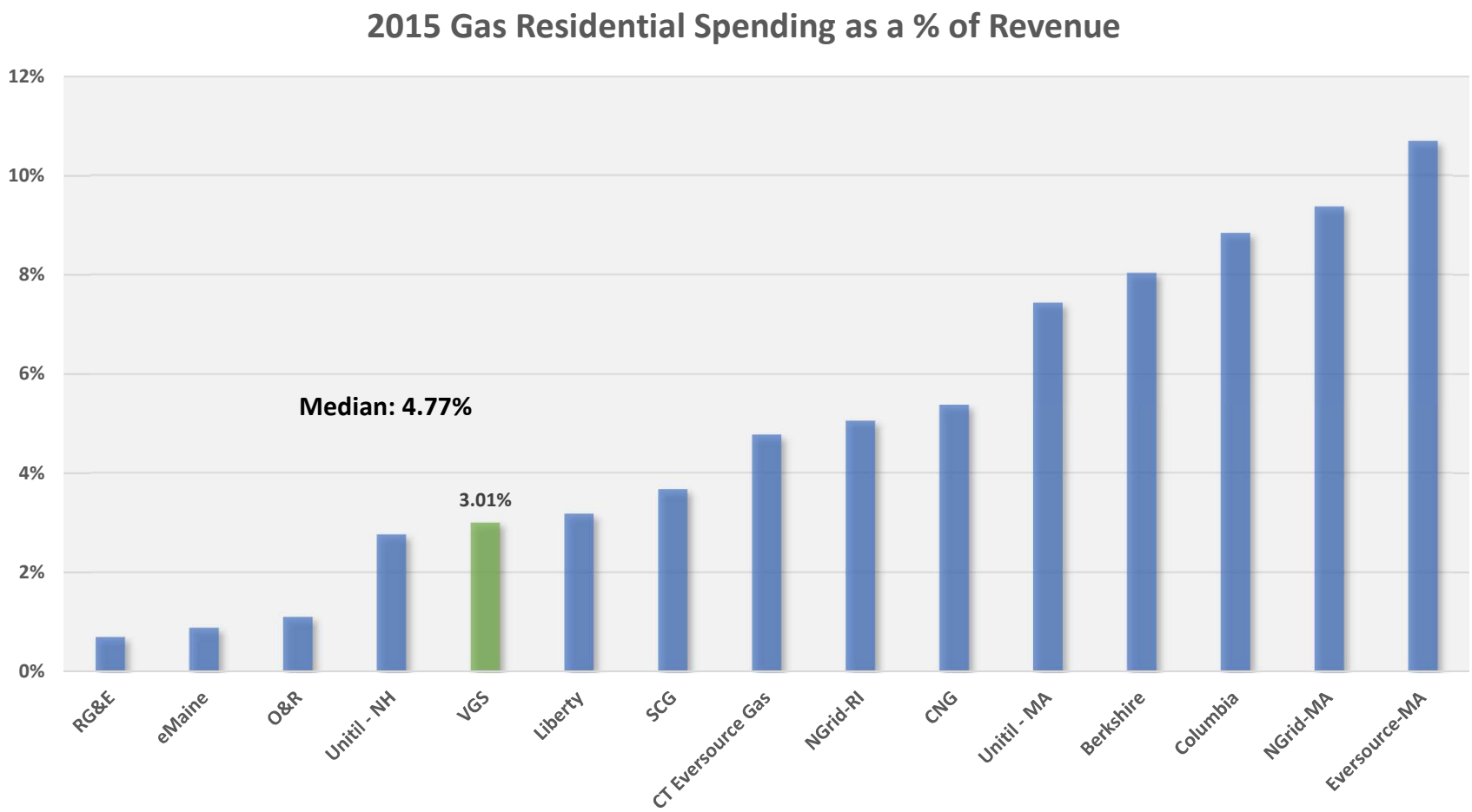
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2014, VGS spent 2.74% of its Residential revenues on efficiency, less than the comparison group median of 3.85%.



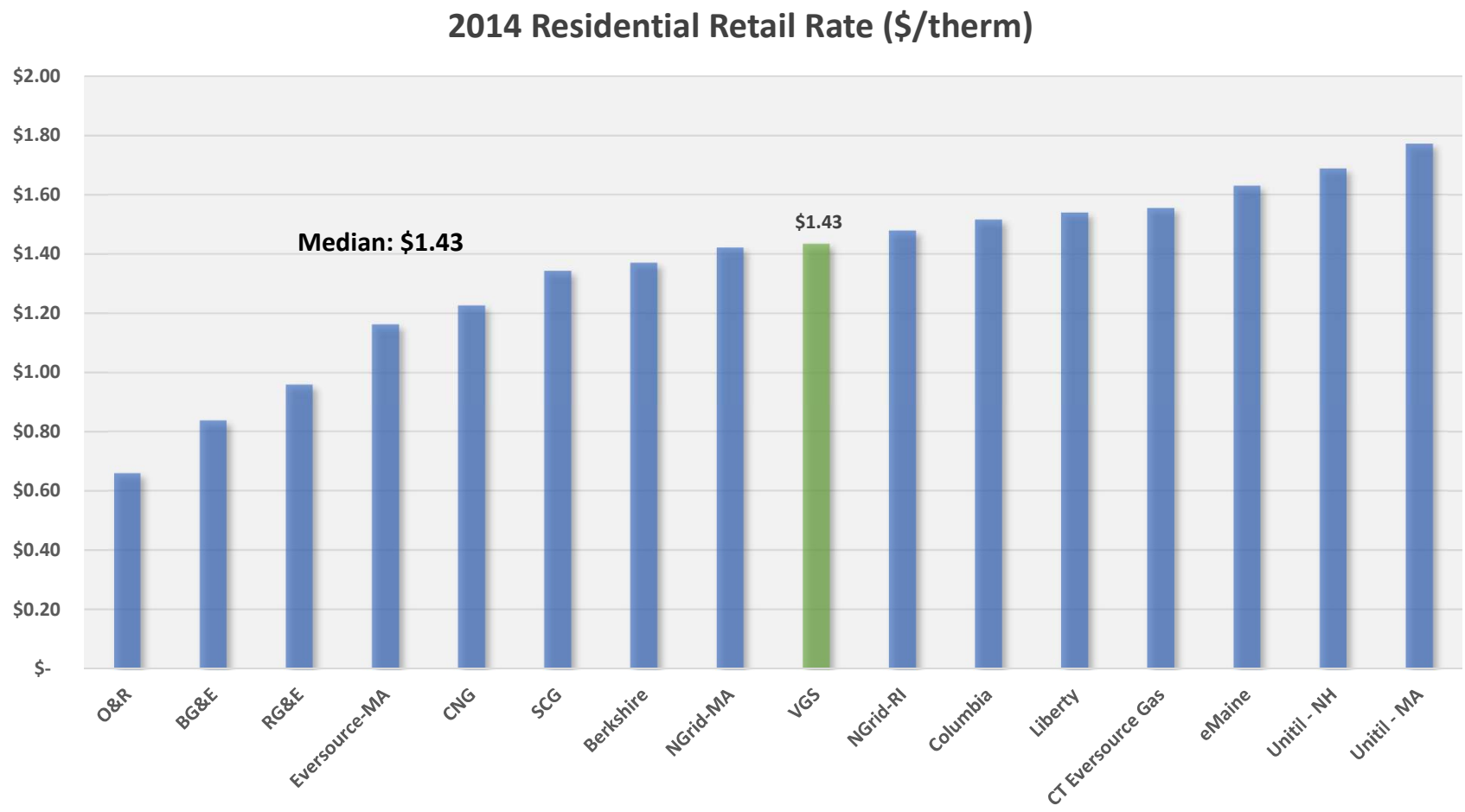
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015, VGS spent 3.01% of its Residential revenues on efficiency, less than the comparison group median of 4.77%.

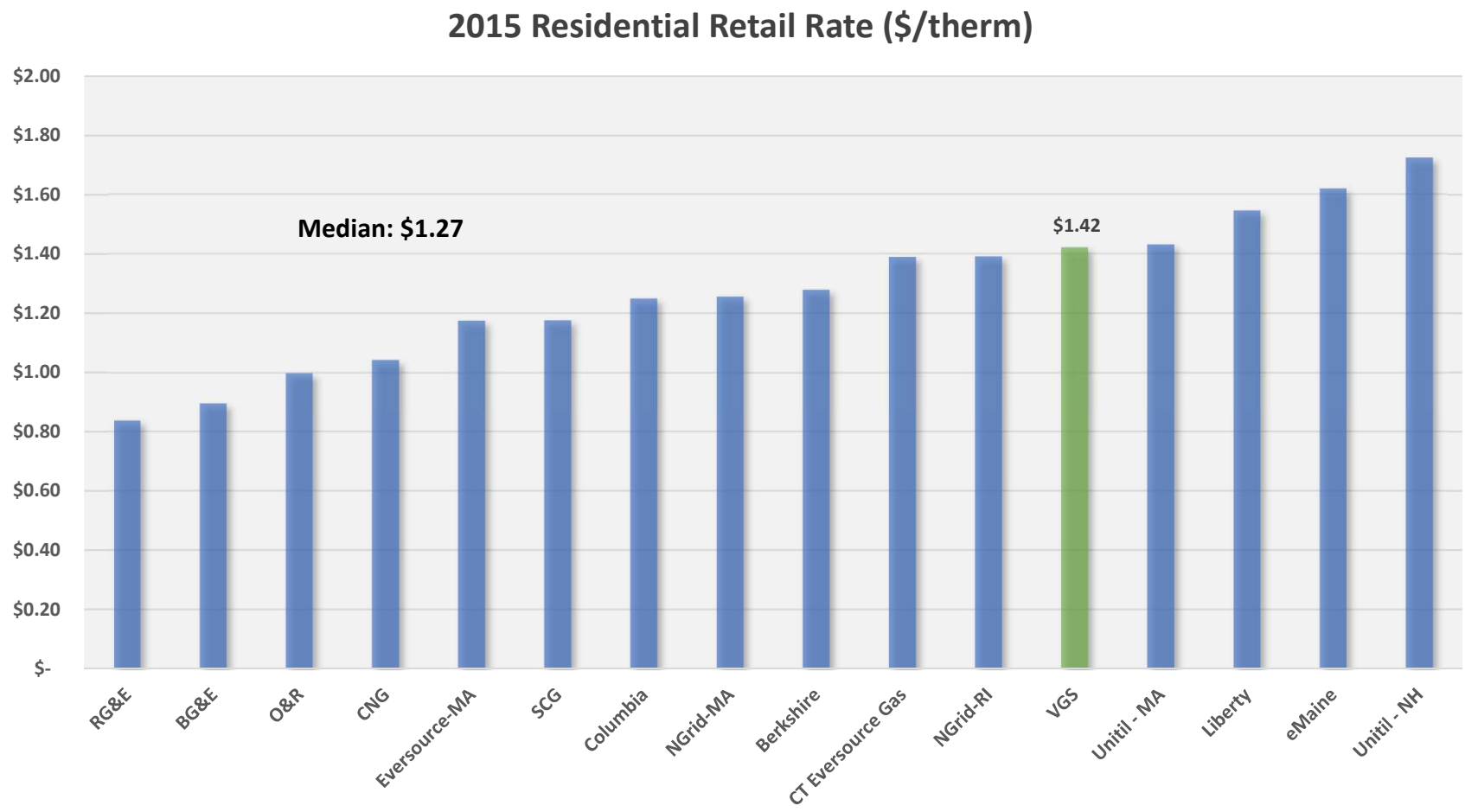


Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

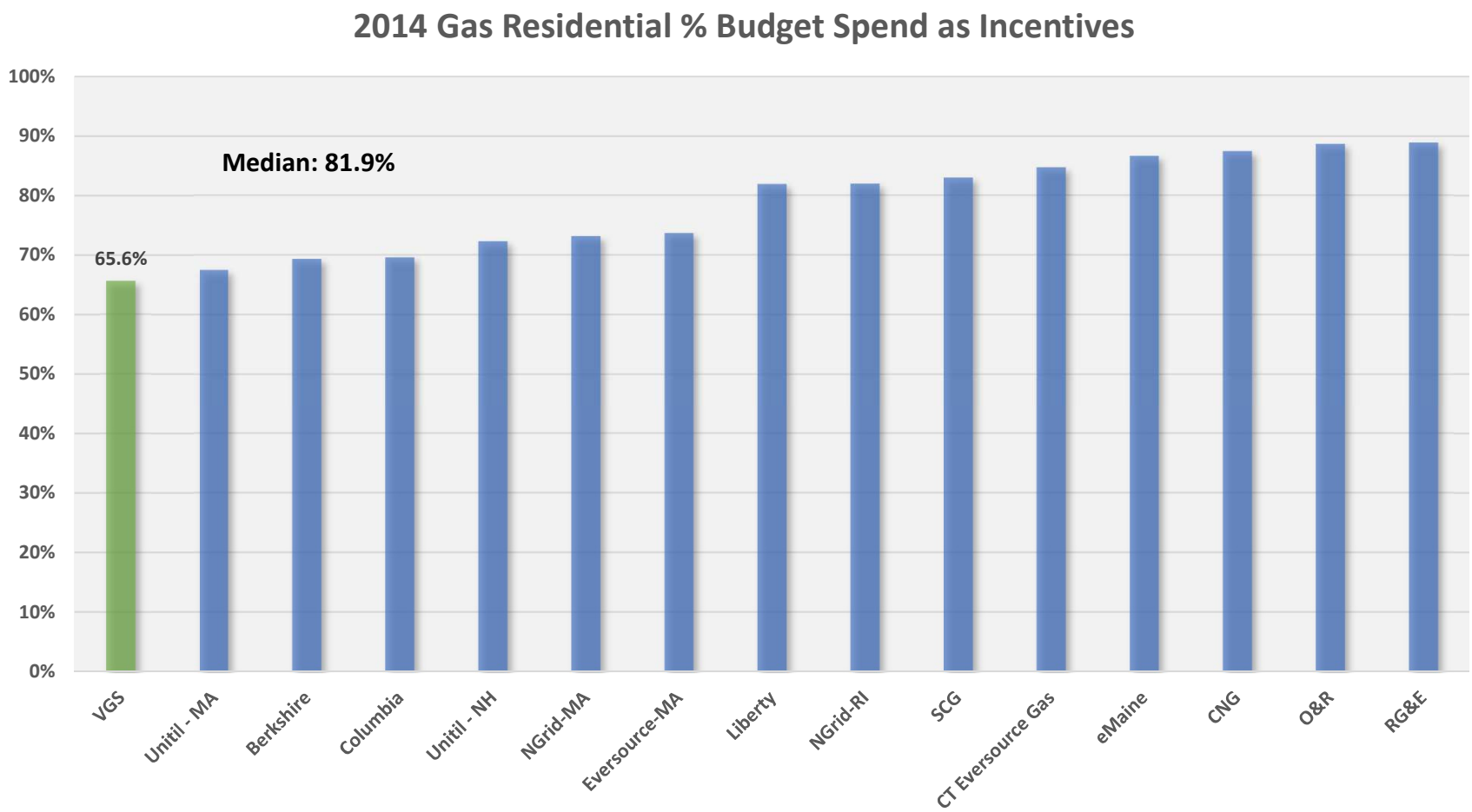
In 2014 VGS's average retail rate was $1.43/therm, equal to the comparison group median.



In 2015 VGS's average retail rate was $1.42/therm, higher than the comparison group median of $1.27.

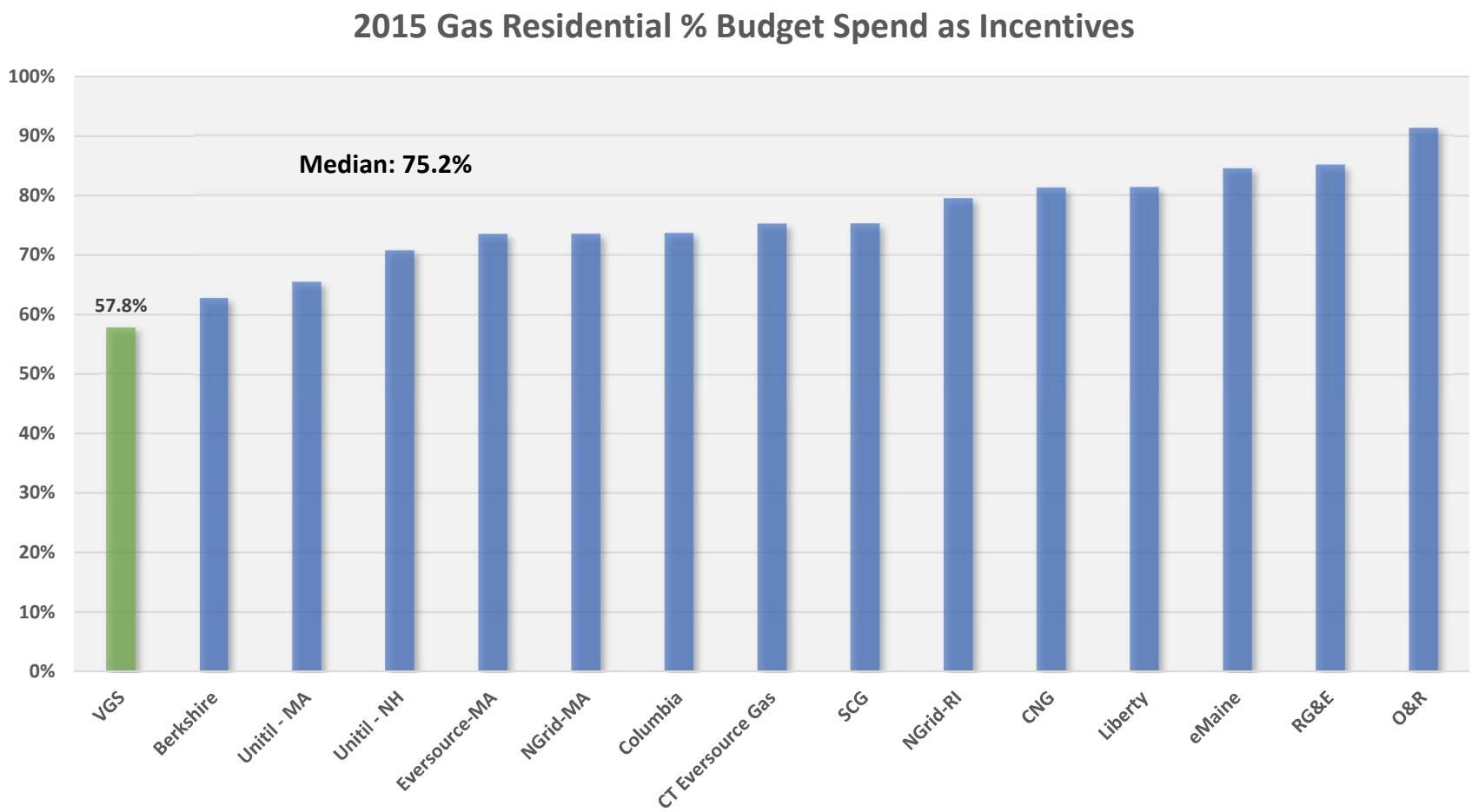


In 2014 VGS spent 65.6% of its Residential budget on incentives, more that the comparison group median of 81.9%.



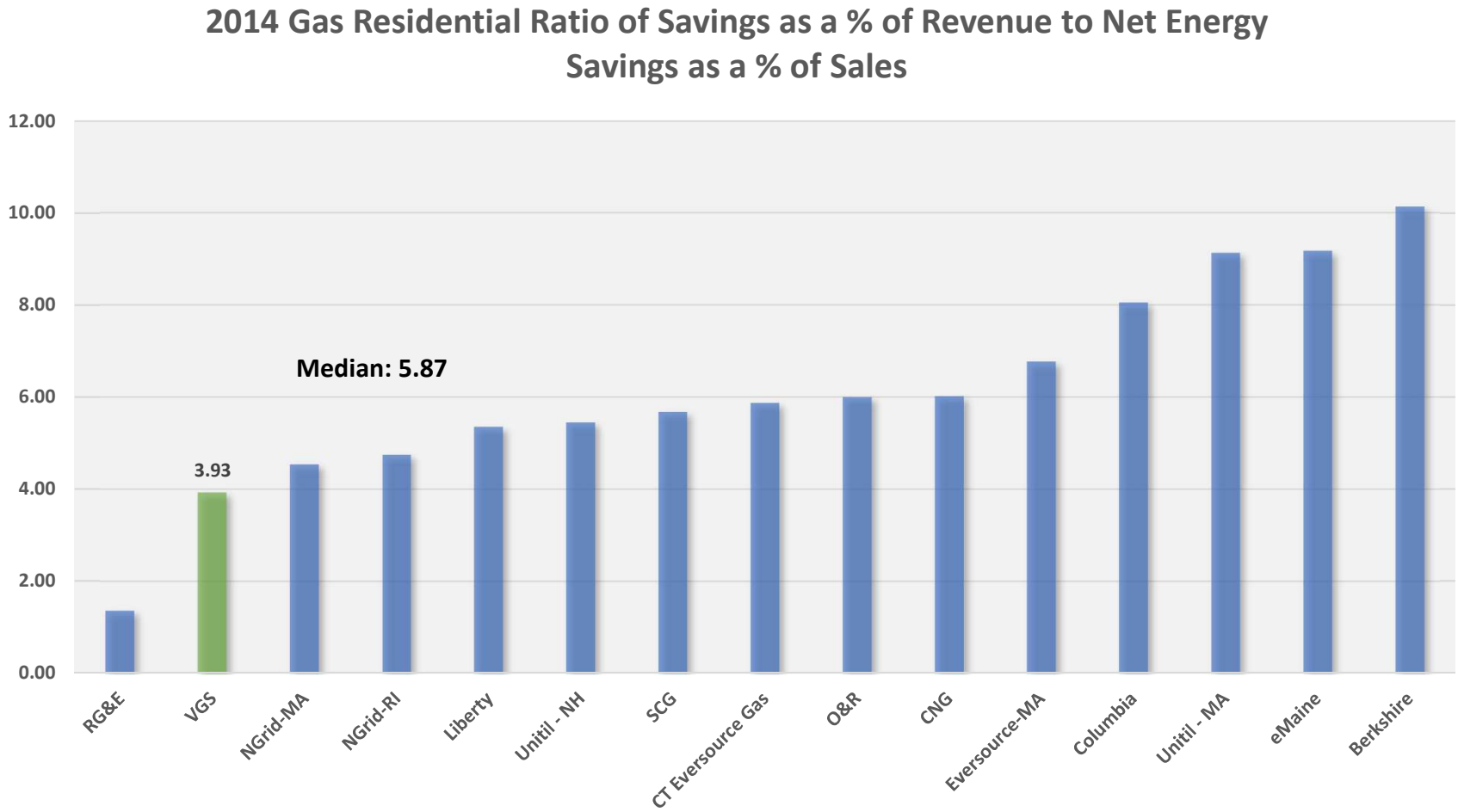
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

In 2015 VGS spent 57.8% of its Residential budget on incentives, less than the comparison group median of 75.2%.



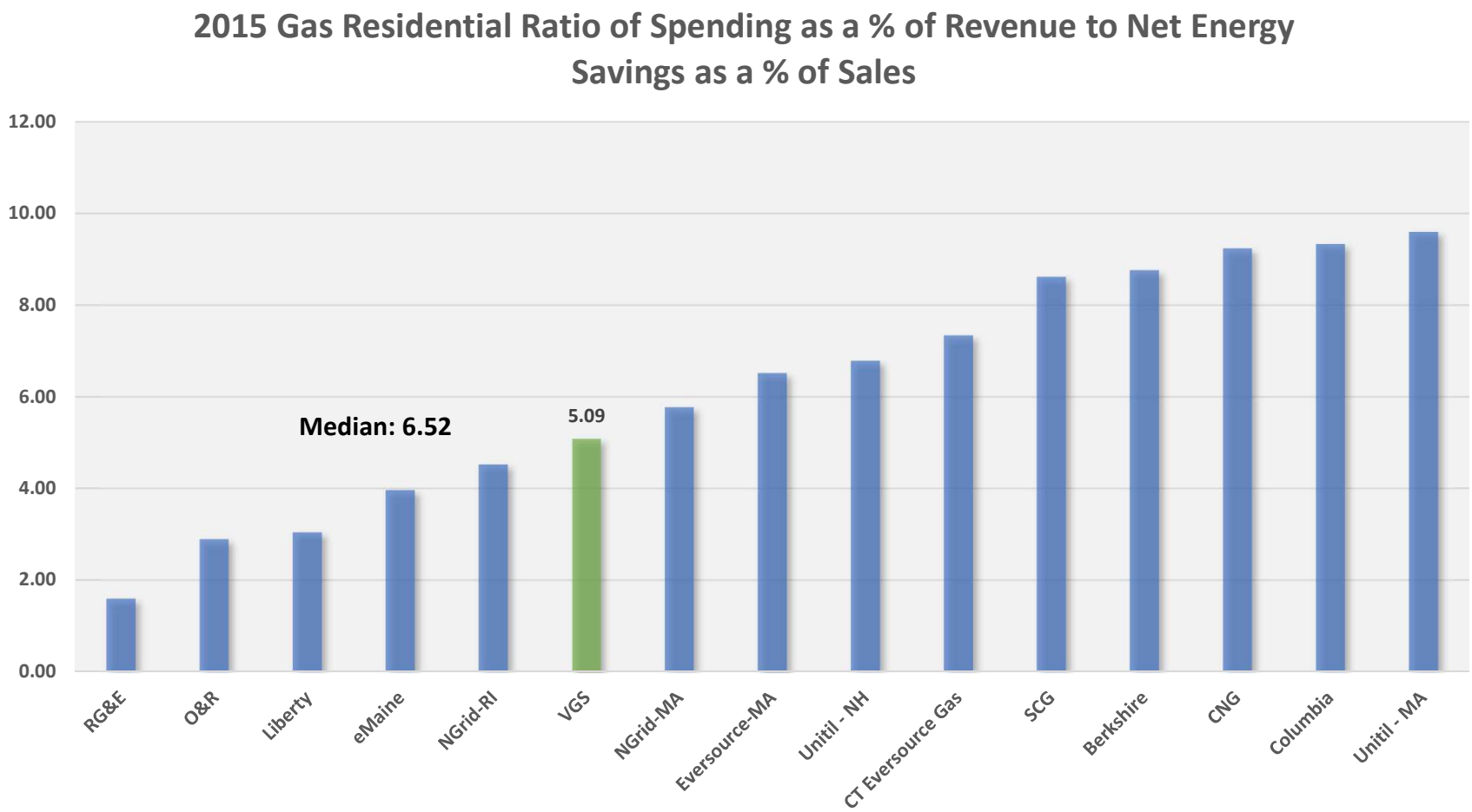
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

At 3.93, VGS's Residential 2014 ratio of spending as a percent of revenue to savings as a percent of sales is lower than the comparison group median of 5.87.



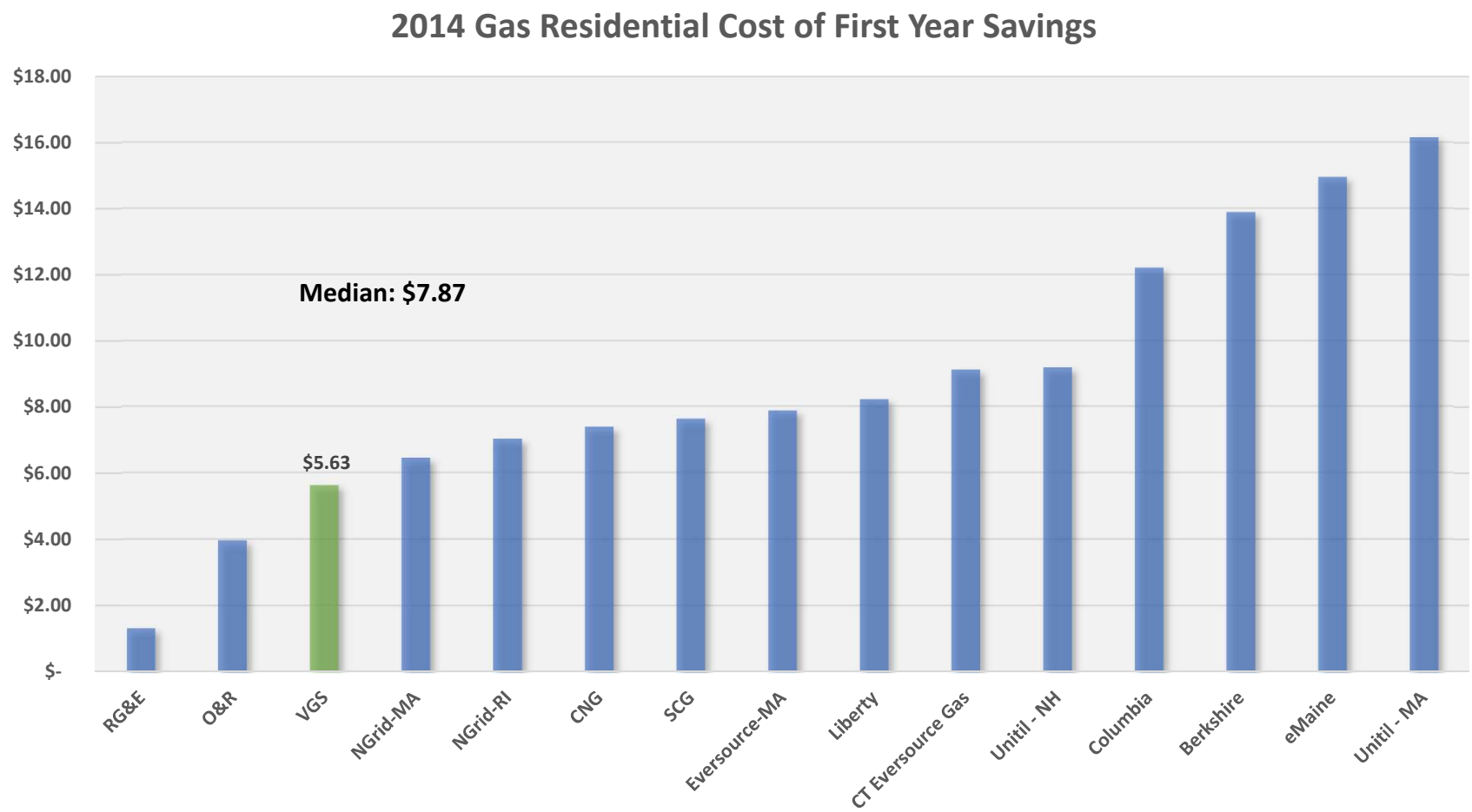
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

At 5.09, VGS's Residential 2015 ratio of spending as a percent of revenue to savings as a percent of sales is lower than the comparison group median of 6.52.



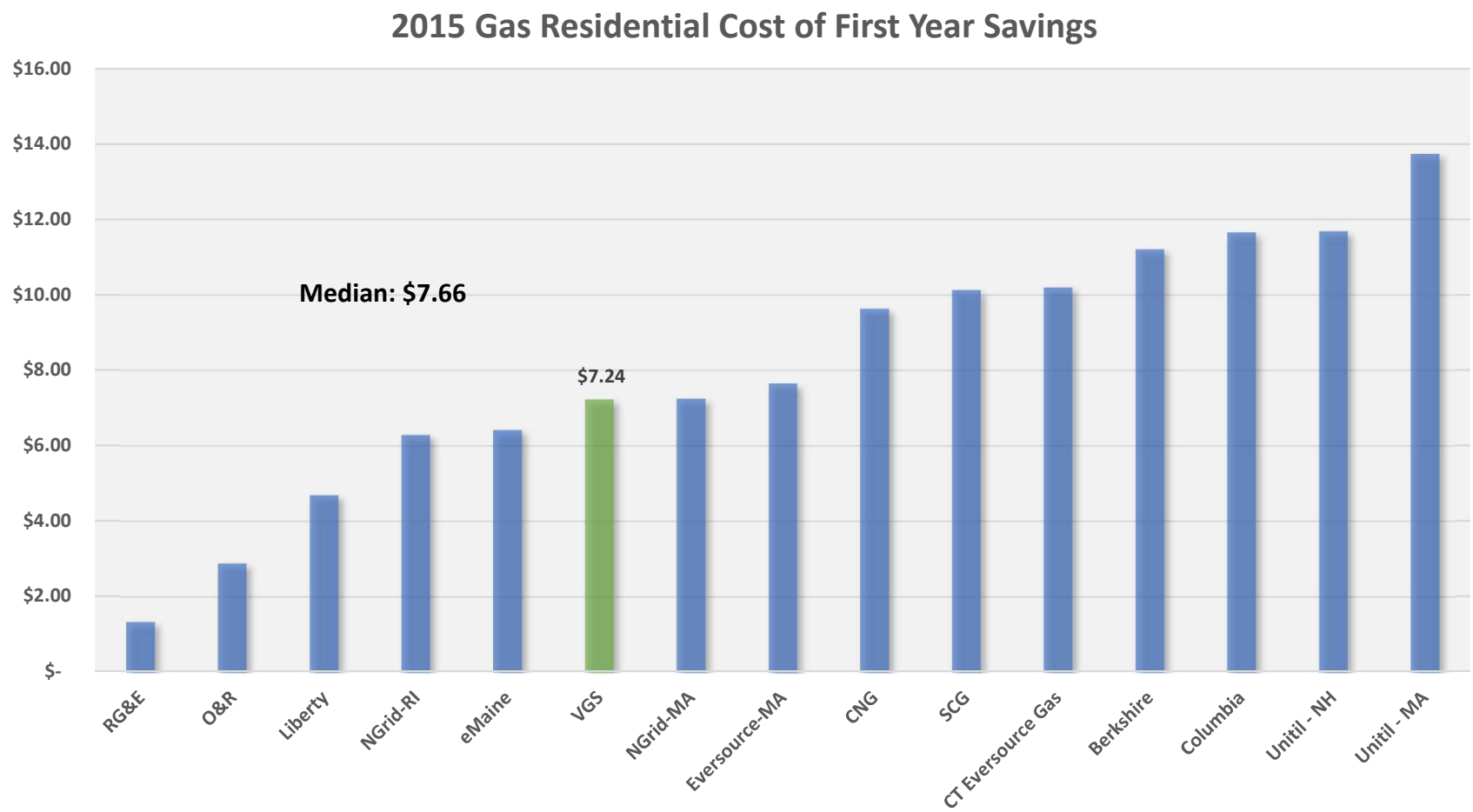
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Residential first year cost of saved energy of $5.63/therm was less than the comparison group median of $7.87/therm.



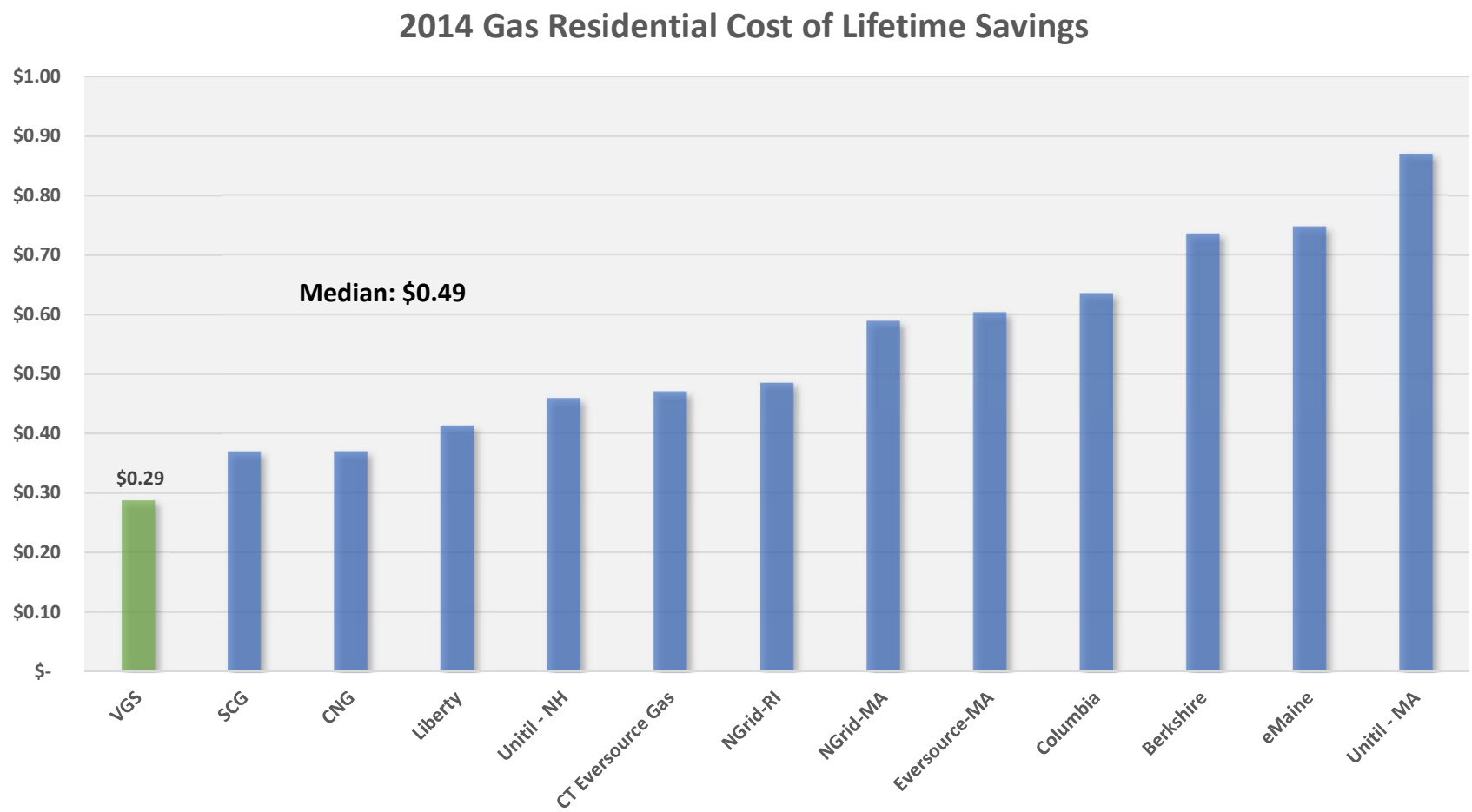
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Residential first year cost of saved energy of $7.66/therm was more than the comparison group median of $6.92/therm.



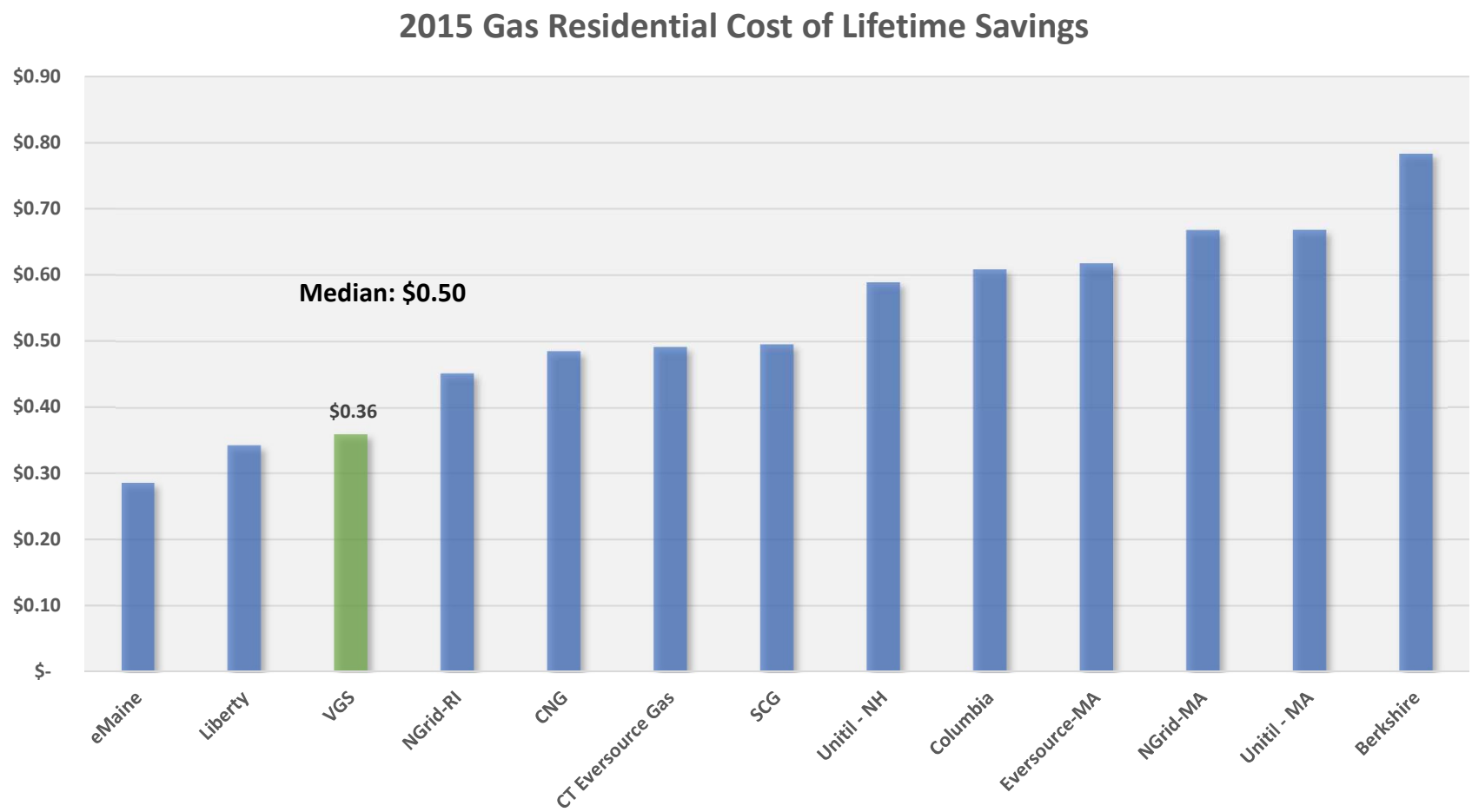
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Residential lifetime cost of saved energy of $0.29/therm is the lowest among the comparison group which has a median of $0.49/therm.



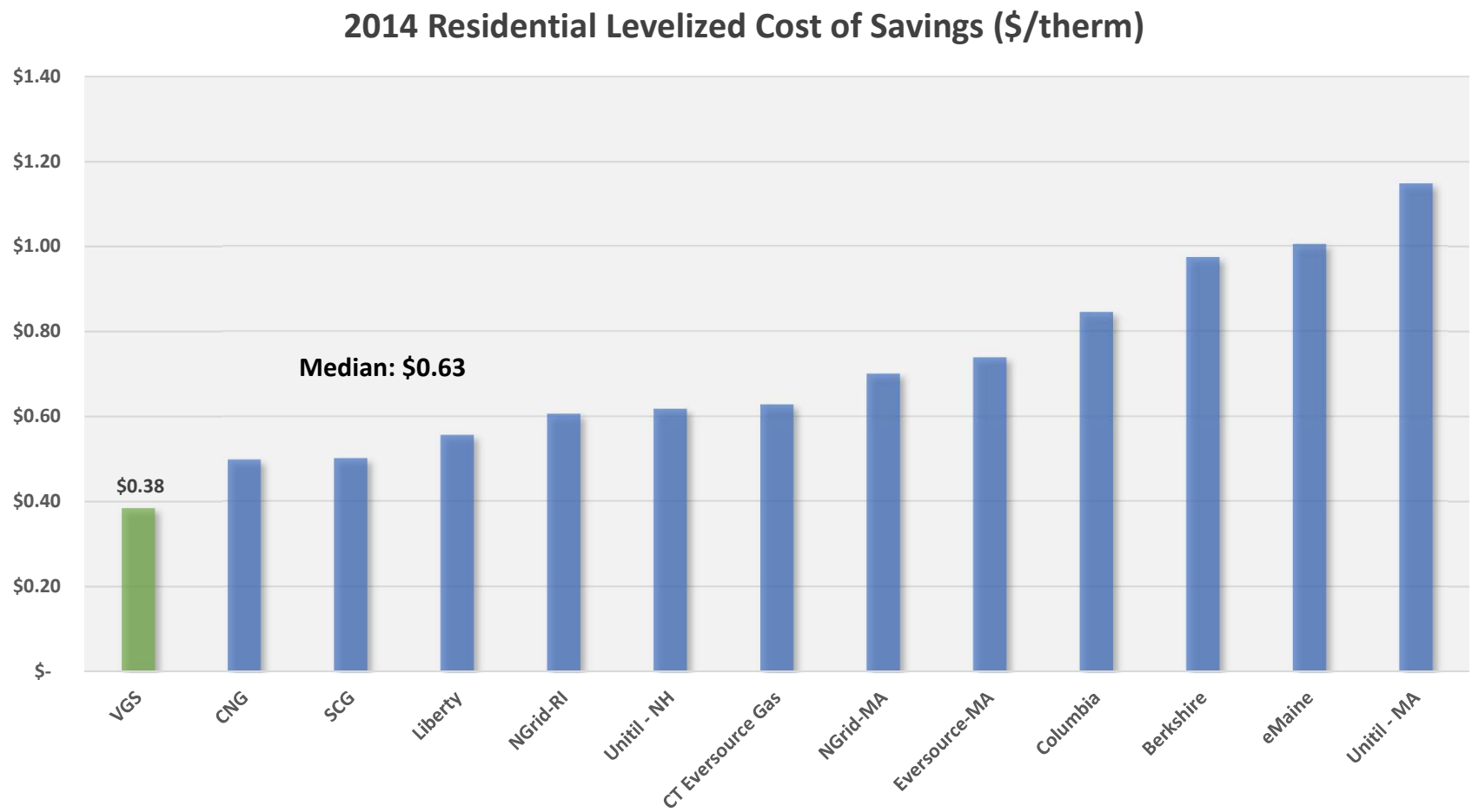
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Residential lifetime cost of saved energy of $0.36/therm is less than the comparison group median of $0.50/therm.



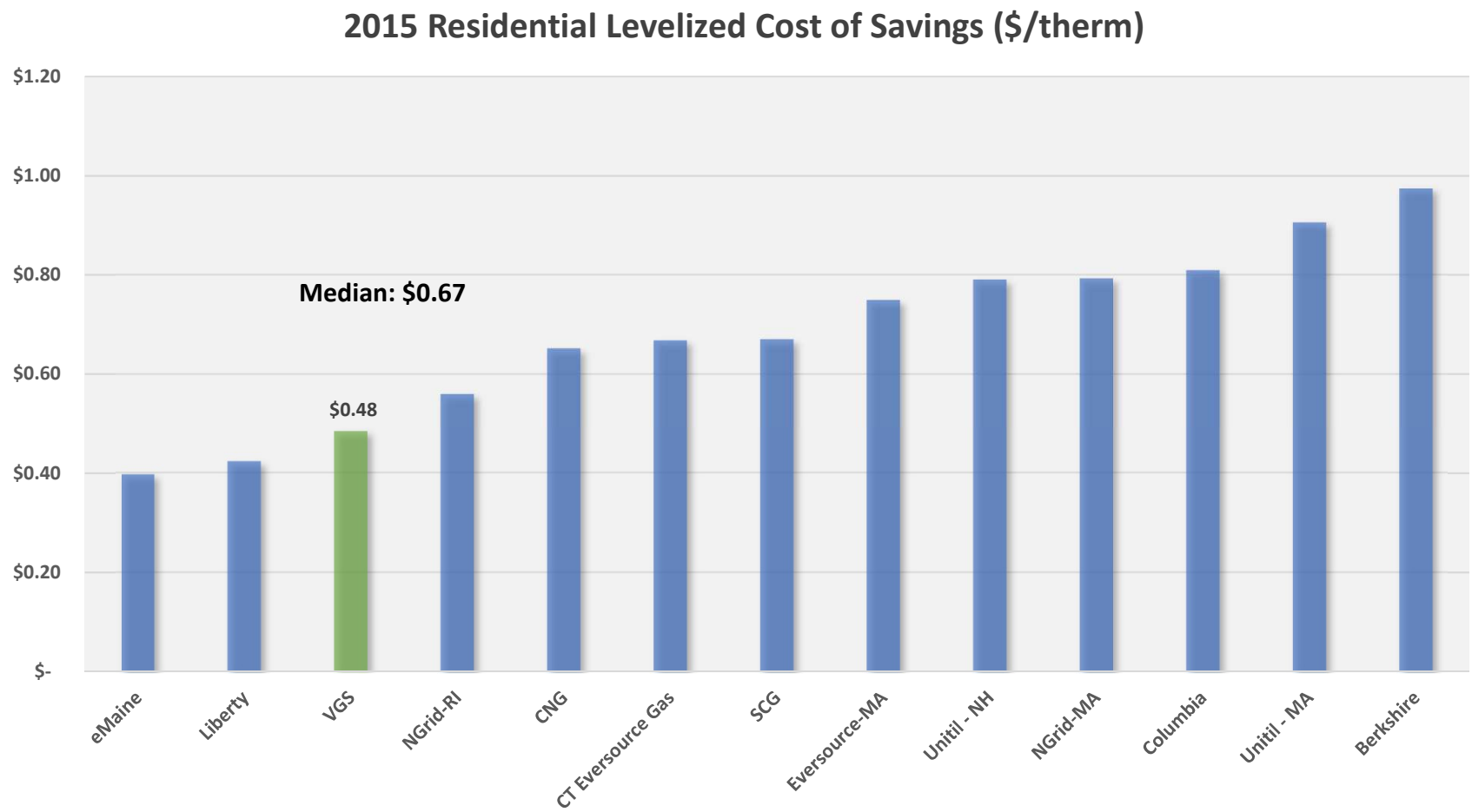
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Residential levelized cost of saved energy of $0.38/therm was the lowest among the comparison group which had a median of $0.63/therm.



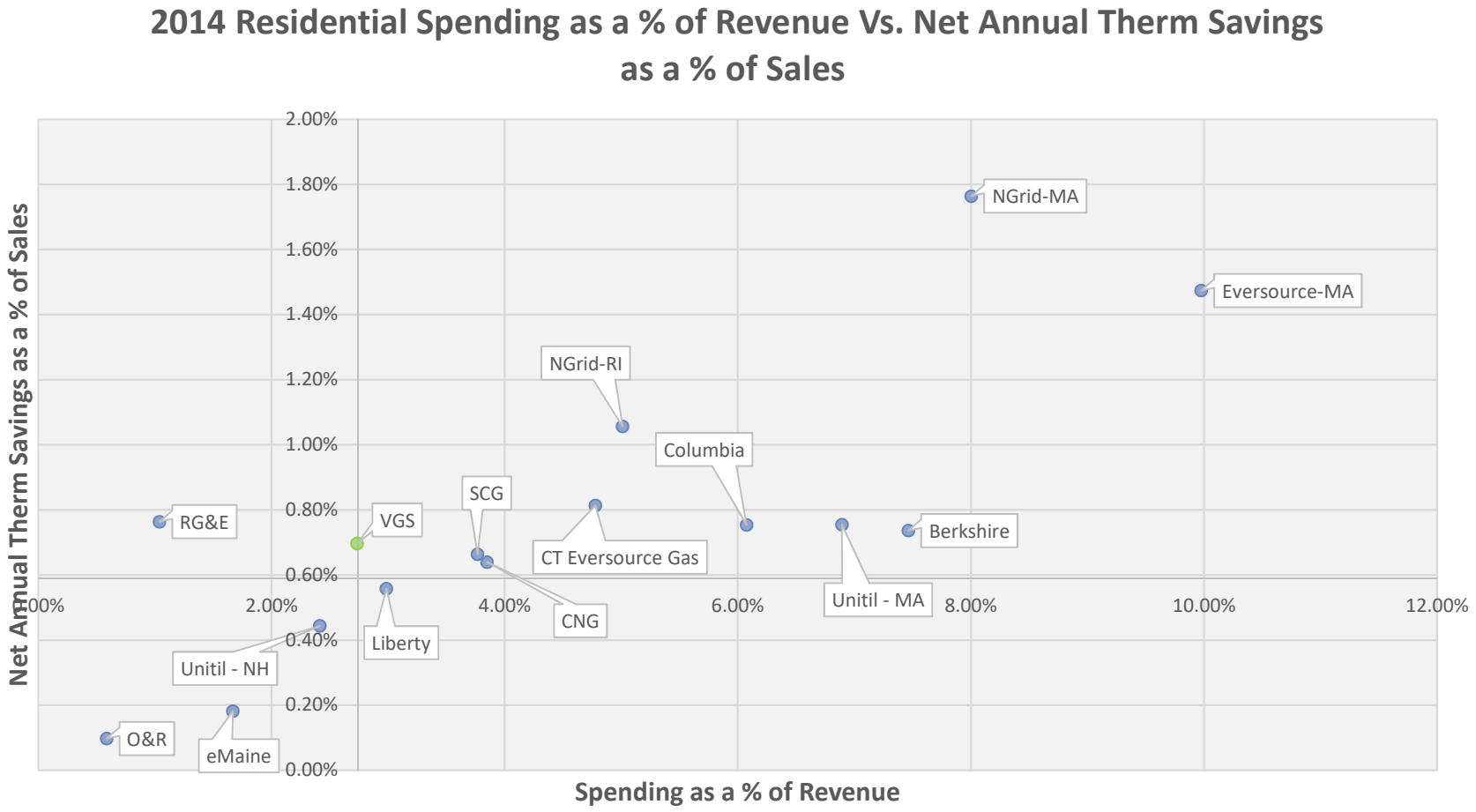
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Residential levelized cost of saved energy of $0.48/therm was less than the comparison group median of $0.67/therm.



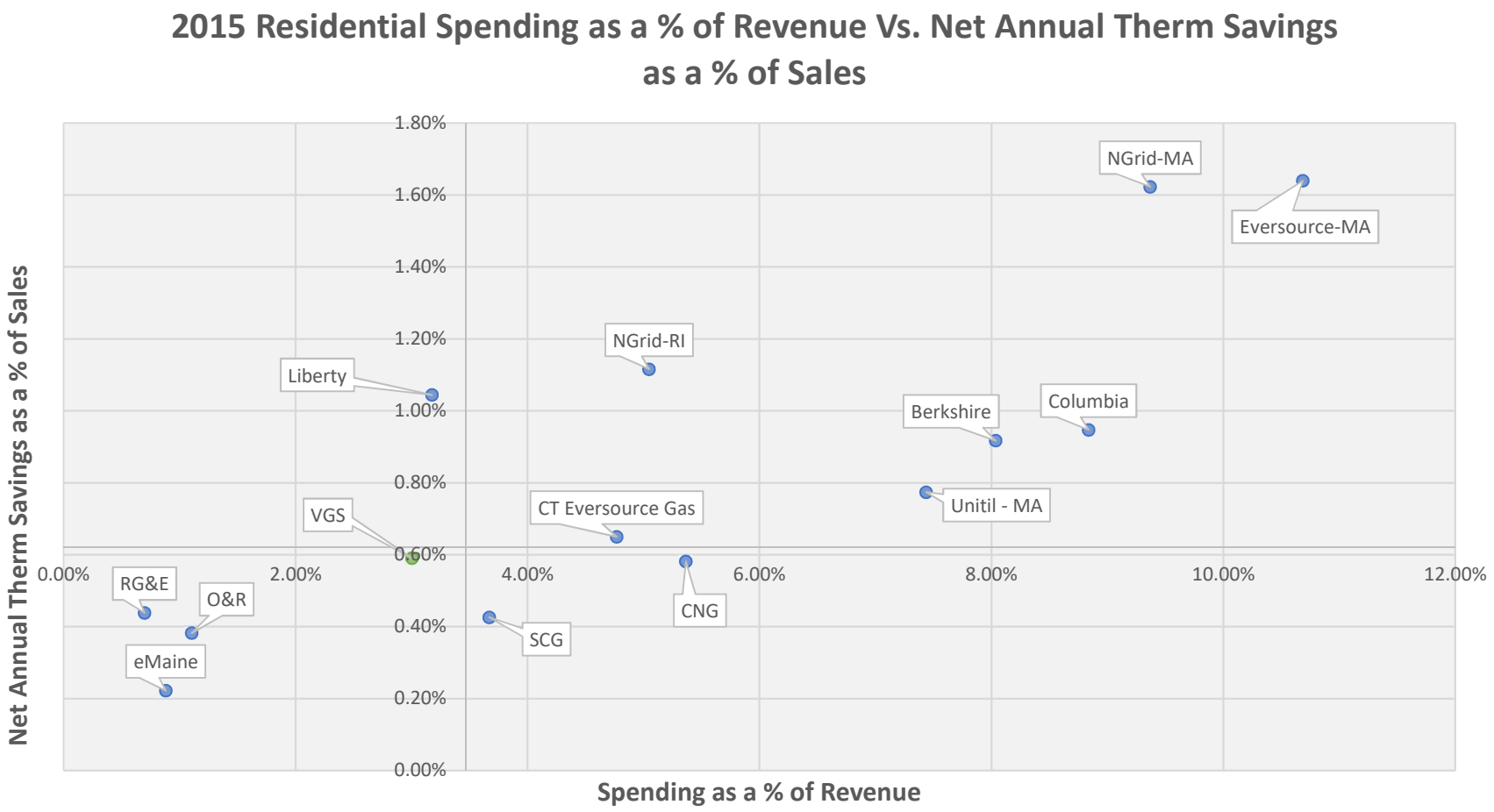
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Residential spending as a percent of revenue was slightly less than the comparison group median, while its savings as a percent of sales was slightly above the median.



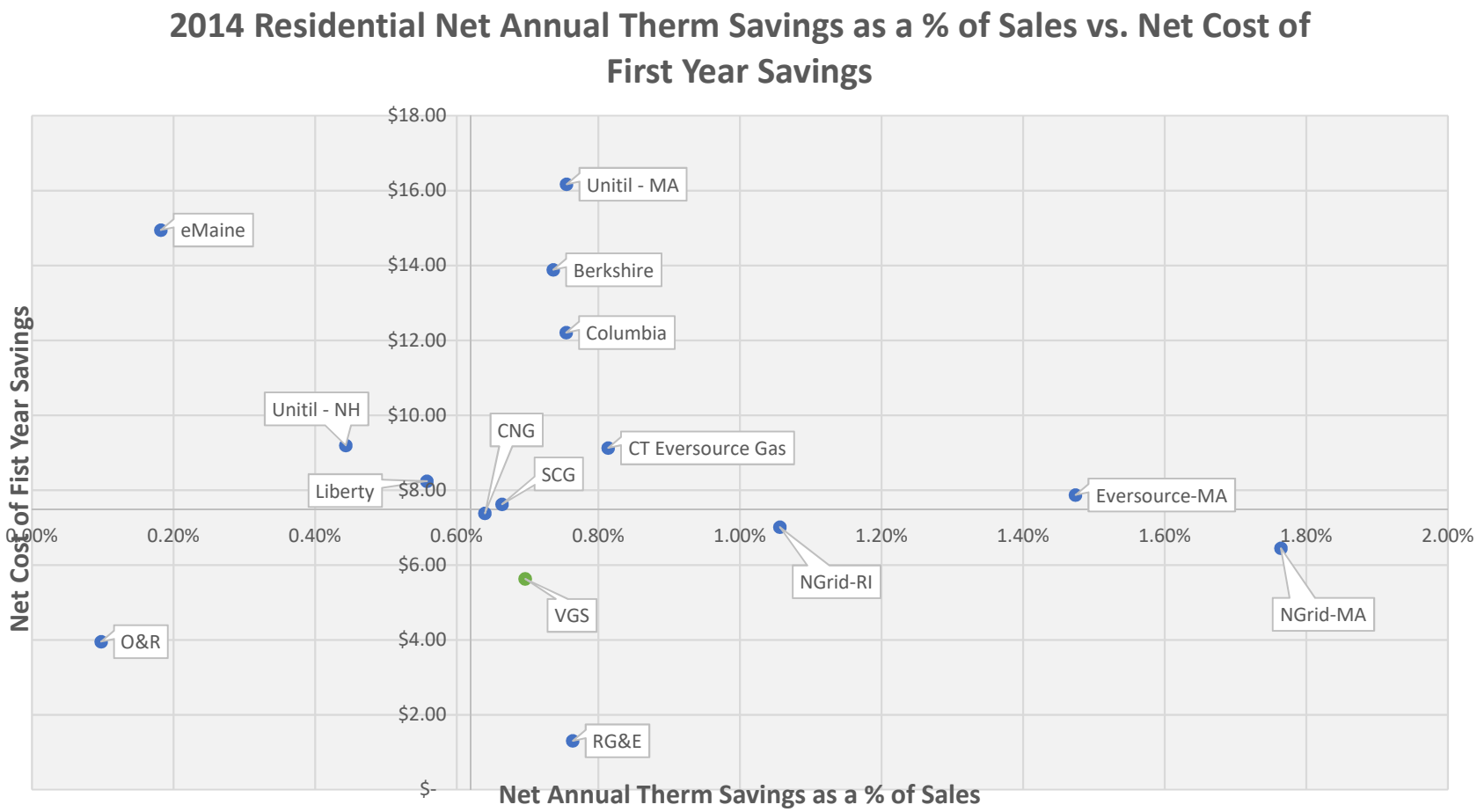
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Residential spending as a percent of revenue and its savings as a percent of sales were both more than the comparison group median.



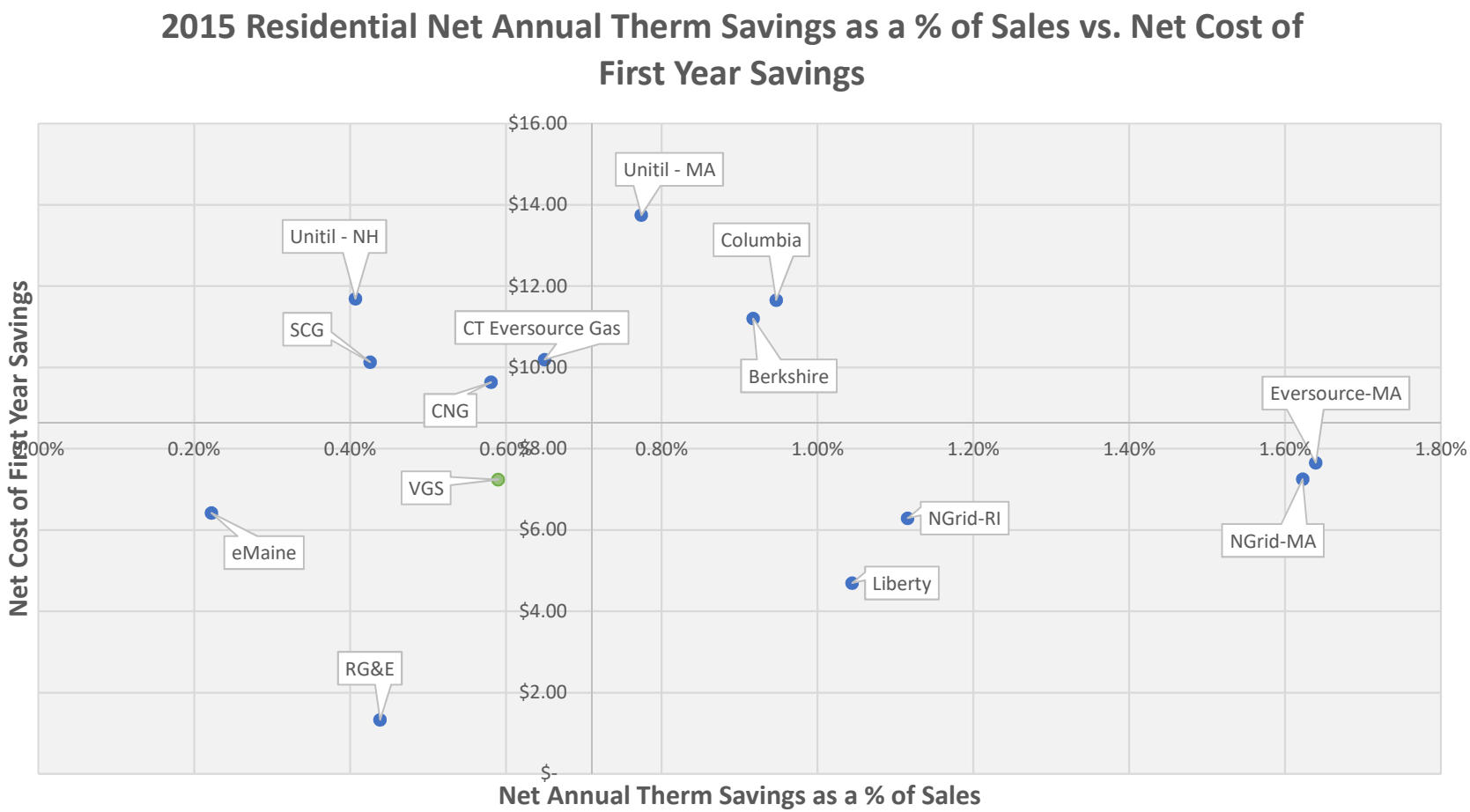
Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2014 Residential savings as a percent of sales are at the median of the comparison group, with it first year cost of saved energy less than the comparison group median.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

VGS's 2015 Residential savings as a percent of and its first year cost of saved energy were both above the comparison group medians.



Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic baseline for VGS peers during 2014 and 2015.

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Section 8: Administrative Cost and Efficiency Benchmarking

Administrative Cost and Efficiency Benchmarking

Using a subset of the larger benchmarking analysis the three current Vermont Energy Efficiency Utilities (EEUs) were benchmarked against other Northeast and Mid-Atlantic energy efficiency program administrators (PAs) on a number of metrics related to administrative costs.

This benchmarking allows for comparison of how different program administrators in the region allocate program costs in their delivery of efficiency services.

The full Administrative Cost and Efficiency Benchmarking report is in Appendix A.

Administrative Cost and Efficiency Benchmarking (cont.)

Summary of Administrative Efficiency Metrics for Vermont Electric EEUs

	2014	2015
Administrative spending as a % of total spending		
Mean of comparison group (electric)	11%	13%
Median of comparison group (electric)	9%	12%
BED	21%	15%
EVT	13%	20%
Non-incentive spending as a % of total spending		
Mean of comparison group (electric)	28%	28%
Median of comparison group (electric)	26%	27%
BED	28%	25%
EVT	51%	51%
Ratio of non-incentive spending to incentive spending		
Mean of comparison group (electric)	0.44	0.45
Median of comparison group (electric)	0.35	0.37
BED	0.39	0.33
EVT	1.06	1.05
Cost of savings		
Mean ($/annual kWh) of comparison group (electric)	$0.34	$0.34
Median ($/annual kWh) of comparison group (electric)	$0.34	$0.36
BED ($/annual kWh)	$0.47	$0.41
EVT ($/annual kWh)	$0.52	$0.45

Administrative Cost and Efficiency Benchmarking (cont.)

- In 2014 and 2015 both Efficiency Vermont and Burlington Electric spent above average on administrative costs as a percent of total efficiency spending compared to the average of comparison Northeast and Mid-Atlantic PAs.
- In 2014, Burlington Electric's non-incentive spending as a percent of total spending was average, while Efficiency Vermont's non-incentive spending was above average. In 2015, Burlington Electric's non-incentive spending was below average and EVT's was above average.
- Efficiency Vermont and Burlington Electric had costs of saved energy ($/annual kWh saved) that were above average. These results suggest that there may be opportunities for Burlington Electric and Efficiency Vermont to reduce administrative and non-incentive costs to reduce their total cost of saved energy.

Administrative Cost and Efficiency Benchmarking (cont.)

Summary of Administrative Efficiency Metrics for Vermont Gas

	2014	2015
Administrative spending as a % of total spending		
Mean of comparison group (gas)	13%	12%
Median of comparison group (gas)	9%	16%
VGS	36%	23%
Non-incentive spending as a % of total spending		
Mean of comparison group (gas)	23%	28%
Median of comparison group (gas)	24%	26%
VGS	38%	45%
Ratio of non-incentive spending to incentive spending		
Mean of comparison group (gas)	0.31	0.44
Median of comparison group (gas)	0.31	0.35
VGS	0.61	0.82
Cost of savings		
Mean ($/ annual therm) of comparison group (gas)	$4.28	$5.03
Median ($/annual therm) of comparison group (gas)	$3.96	$4.50
VGS ($/annual therm)	$2.46	$2.72

Administrative Cost and Efficiency Benchmarking (cont.)

Vermont Gas had above average administrative and non-incentive costs as a percent of total spending in 2014 and 2015 when compared to other gas PAs in the region. However, VGS had below average costs of saved energy ($/annual therm saved) relative to comparison gas PAs.

This suggests that although Vermont Gas's administrative costs were above average, they were not necessarily a clear indicator that program funding was spent inefficiently. As previously mentioned, VGS savings numbers were not verified in years 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings.

Administrative Cost and Efficiency Benchmarking (cont.)

VGS Caveat

As noted above for the larger benchmarking effort, VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Administrative Cost and Efficiency Benchmarking (cont.)

Recommended Next Steps

- Adopt a consistent definition of administrative costs for all EEUs and define the level of reporting granularity to allow all cost data to be aggregated to meet differing definitions. For example, to address possible differences in how Vermont and REED define administrative costs. For higher-level reporting categories consider ease of rolling up costs as either direct or indirect costs.
- Determine whether RA and DSS/NRA cost allocations and reporting should be retained. If they are, develop and provide explicit guidance as to how program costs are to be allocated to each of these two higher level cost reporting categories.

Administrative Cost and Efficiency Benchmarking (cont.)

Recommended Next Steps

- Carefully define the components for each metric considered as a potential QPI, possibly informed by work in other jurisdictions, and determine what changes need to be made to each Vermont EEU's cost category definitions and reporting. If the necessary data are not currently reported by the Vermont EEUs, ascertain the costs and time involved for the EEUs to develop the necessary budget tracking and reporting systems.
- Review the possible QPIs and specify which are suitable to be proposed to the PUC and subsequently reported on by the Vermont EEUs. A single metric to fully assess EEU operating performance may be insufficient. Administrative cost percentage, non-incentive cost percentage, and cost of savings metrics all measure different, though overlapping, aspects of operating programs efficiently. To provide the most comprehensive assessment of program operations, multiple metrics are appropriate.

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Section 9:
Deeper Dive Findings

Deeper Dive Findings

Introduction

To provide greater insights into a set of selected topics, several focused research efforts were undertaken as part of this study:

- Compensation benchmarking
- Review of REED, program filings, and other data sources and the completion of Program administrator staff surveys to address:
  - Delivered fuel efficiency programs
  - Job impacts
  - Low income programs
- Low income program benchmarking

Deeper Dive Findings (cont.)

Compensation Benchmarking

EVT's current compensation mechanism was benchmarked against a number of other PAs.

The comparison group was different than that used for the report's other benchmarking efforts, though there was some overlap.

To increase the number of organizations similar to EEUs in the comparison group, out of region PAs were included in the comparison group.

Nine PAs/EEUs, including EVT, were in the comparison group.

Deeper Dive Findings (cont.)

Compensation Benchmarking (cont.)

Compensation is typically tied to performance relative to a prescribed set of goals. In some cases goals may be structured in a way that it is not possible to earn all of the available performance incentive.

Including EVT, four of the nine surveyed EEUs or their program administrators are eligible to obtain performance-based compensation similar to that received by EVT:

- EVT (Administered by VEIC)
- Efficiency Smart-Ohio (Administered by VEIC)
- DC Sustainable Efficiency Utility (Administered by VEIC)
- Hawaii Energy (Leidos)

Note that three of these EEUs, including EVT, are administered by VEIC.

Deeper Dive Findings (cont.)

Compensation Benchmarking (cont.)

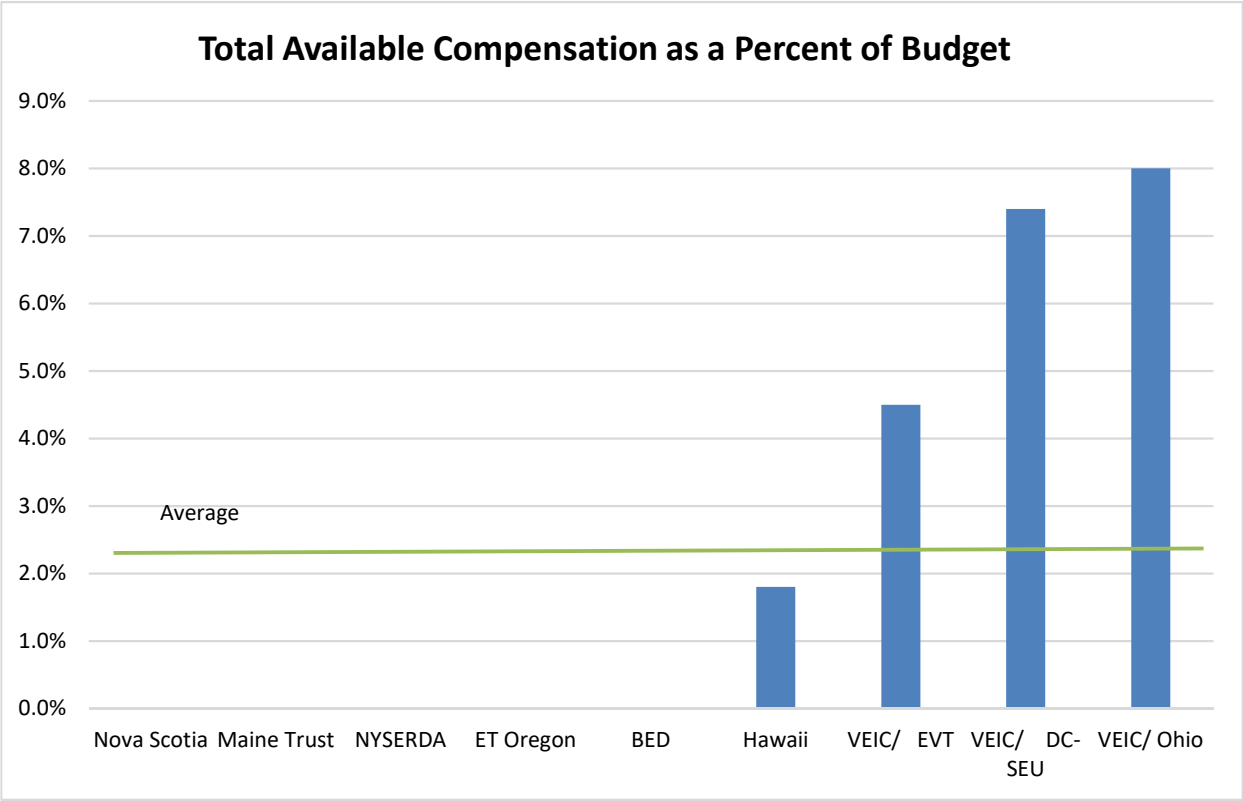
The five surveyed EEUs that were not eligible for compensation at the time of the analysis were:

- Efficiency Maine
- NYSERDA
- Efficiency Nova Scotia
- Energy Trust of Oregon
- Burlington Electric Department

For several of the above EEUs/PAs, programs are managed with internal staff, with program implementation typically supported through the award of multiple, shorter contracts for specific programs or sets of programs.

Deeper Dive Findings (cont.)

Compensation Benchmarking (cont.)



Deeper Dive Findings (cont.)

Compensation Benchmarking (cont.)

- The average total potential compensation rate for all of these non-IOU administrators is 2.4%. EVT's potential compensation rate of 4.5% is 2.1 percentage points greater than the average potential compensation rate relative to these non-IOU entities.
- When just looking at the group of most similar non-IOU program administrators (DC SUE, Efficiency Nova Scotia, Hawaii Energy, Efficiency Smart-Ohio, and BED), the average potential compensation rate is 3.6%.
  - This peer group based on scale, level of activity, and administrative model
- Compared to this smaller, most similar group of program administrators, EVT's potential compensation rate is 0.9 percentage points larger.

Deeper Dive Findings (cont.)

Deeper Dive PA Surveys and Program Reviews

- Surveys were sent to all of the PAs in the initial project benchmarking group, including those that were not ultimately included in the quantitative benchmarking group.
- In total, surveys were sent to 22 gas and electric PAs, including the three VT EEUs. Note that in some cases a single PA was asked to respond on behalf of both their electric and gas efficiency program activities.
- Requests for quantitative data were not always fulfilled.
- Full or partially completed surveys were obtained from 14 electric or gas PAs. These responses were supplemented with follow-up phone calls and review of filed program reports.

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Delivered fuels*

- Several PAs indicated that they provided delivered fuel-targeted measures, mostly focused on residential and low income activities
- Of those that did, most did not have specific delivered fuel programs, budgets or goals, though fossil fuel savings contributed to benefits and net benefits goals and shareholder performance metrics
  - Delivered fuel measures offered as part of broader, more comprehensive electric programs
- Sources of funding varied and included:
  - Regional Greenhouse Gas Initiative (RGGI)
  - ISO-FCM
  - System Benefit Charge

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Delivered fuels (cont.)*

- Currently, all of the southern New England efficiency programs support, at a minimum, delivered fuel efficiency efforts for their residential and low income customers.
- However, incentives and/or financing may be more restrictive, e.g., RI does not provide financing for delivered fuel heating system equipment, but it does for weatherization in residences using delivered fuels.
- Some, limited reporting of delivered fuel savings in REED, but data is not always tied to the year of reporting.
- Several PAs report out delivered fuel savings by program and/or by fuel type.

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Delivered fuels (cont.)*

- MA electric PAs report out delivered fuel savings for:
  - Fuel oil
  - Propane
  - Wood (though none projected in 2019-2021 plan)
- Tracking delivered fuel savings may be complicated as PAs pursue fuel switching activities, e.g., HP beneficial electrification.
  - Though VT EEC funds can not be used for fuel switching/electrification, they can be used to incentivize more efficient CCHPs.
- With their new 2019-2021 Plan, MA will be tracking MMBtu savings across all fuels, both with and without fuel switching and active demand management (demand response).
- Similarly, MWh savings will also be tracked and reported both with and without fuel switching and active demand management.

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Job Impacts*

Job impacts are not routinely tracked or reported by PAs.

- Only ETO tracked economic development indicators
  - Used an economic multiplier study to track economic impacts and jobs at a macro level for the entire Energy Trust
  - Track net job impacts
- CT includes estimates of job impacts in its Annual Legislative Report leveraging DOE analyses.
- RI's recently modified cost-effectiveness framework, assigns a monetized non-energy impact value to job creation based on energy savings.

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Low-Income Programs*

- The definition of "low-income" for single family homes are different for each PA
  - NYSERDA: <80% of Area/State Median Income
  - ETO: Target moderate-income households at 80-120% of State median income.
    - Allow lower income customers to participate, but try to steer towards local community agencies to provide free services
  - BG&E: ≤200% of the federal poverty line
  - National Grid: ≤ 60% of Area Median income
  - EVT & BED: 80% or less of state median household income

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Low-Income Programs (cont.)*

- Multifamily Low-income programs are also different for each PA
  - ETO: No distinct low-income multi-family offering
  - BG&E: Must be rental housing for low-to-moderate income households. Program funds 100% of the cost of qualified energy conservation measures with Savings to Investment Ratio (SIR) at or above 1.5; or Cost Effectiveness Ratio (CER) at or above 1.0.
  - National Grid: ≤ 60% of State median income
  - EVT & BED: 50% or more of the units have to serve LI residents

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Low-Income Programs (cont.)*

- In 2015 EVT, BED and several other Northeast PAs had, in regulation or in practice, minimum low-income spending requirements.
  - MA - mandates that at least 10% of total electric efficiency spending and 20% of gas energy efficiency spending be invested in comprehensive low-income residential demand-side management and educational programs. (legislative requirement)
  - VT - has minimum low-income spending requirements. EVT must spend a minimum of $10.5 million on low-income services for the 2015-2017 period. BED has a minimum low-income spending requirement equal to 70% of the low-income sector share of total resource-acquisition spending. VGS has the same requirement as BED for the 2018-2020 performance period.

Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Low Income Programs (cont.)*

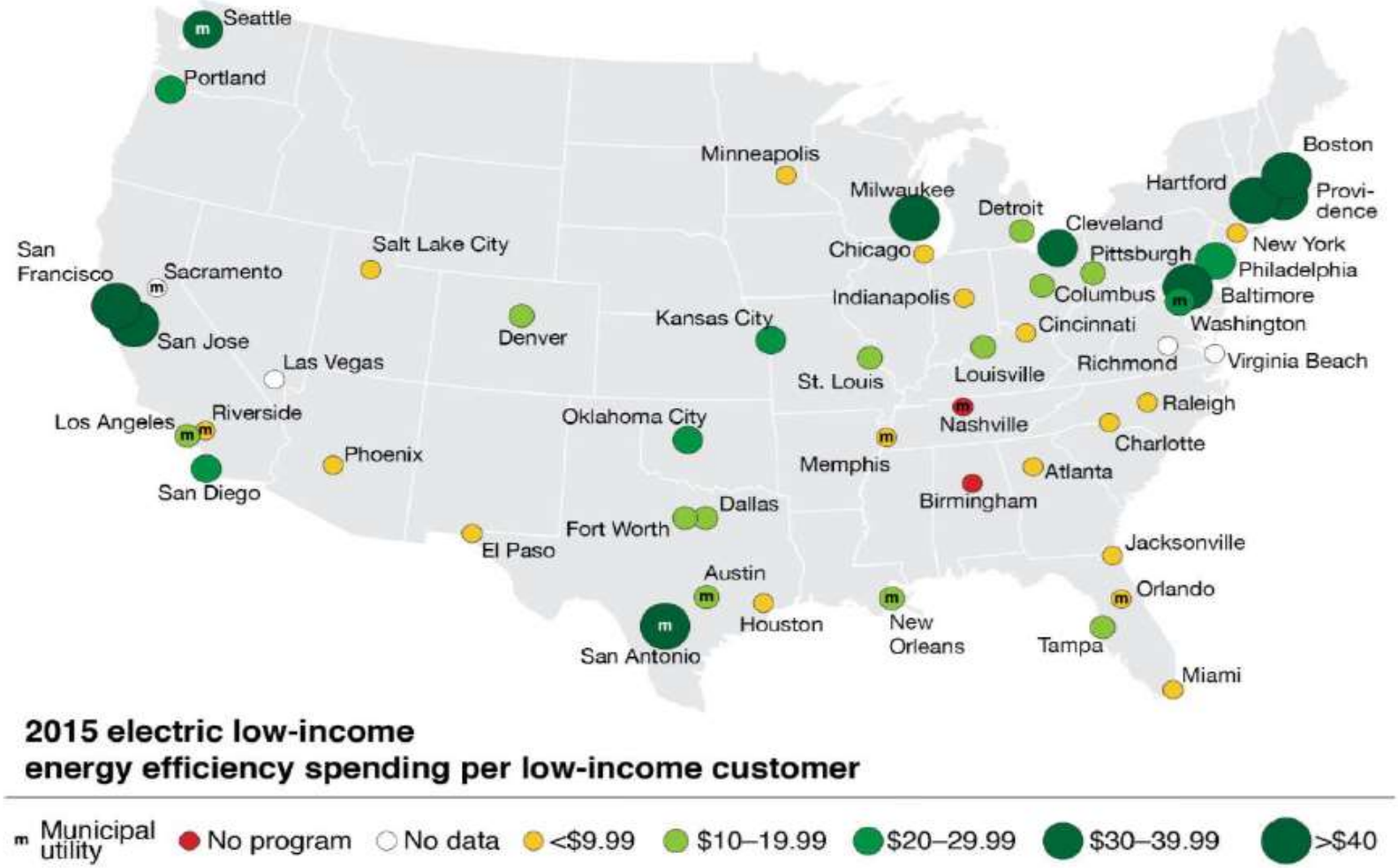
- CT - low-income budget as a percent of total efficiency spending is at or above the percent of low-income revenue collections.
- NH - requires a minimum low-income share of the overall energy efficiency budget of 17%.
- ME - requires that Efficiency Maine target at least 10% of funds for electricity conservation collected or $2.6M, whichever is greater, to programs for low-income residential consumers.
- PA - requires each utility to obtain a minimum of 5.5% of their total consumption reduction target from the low-income sector.

Deeper Dive Findings (cont.)

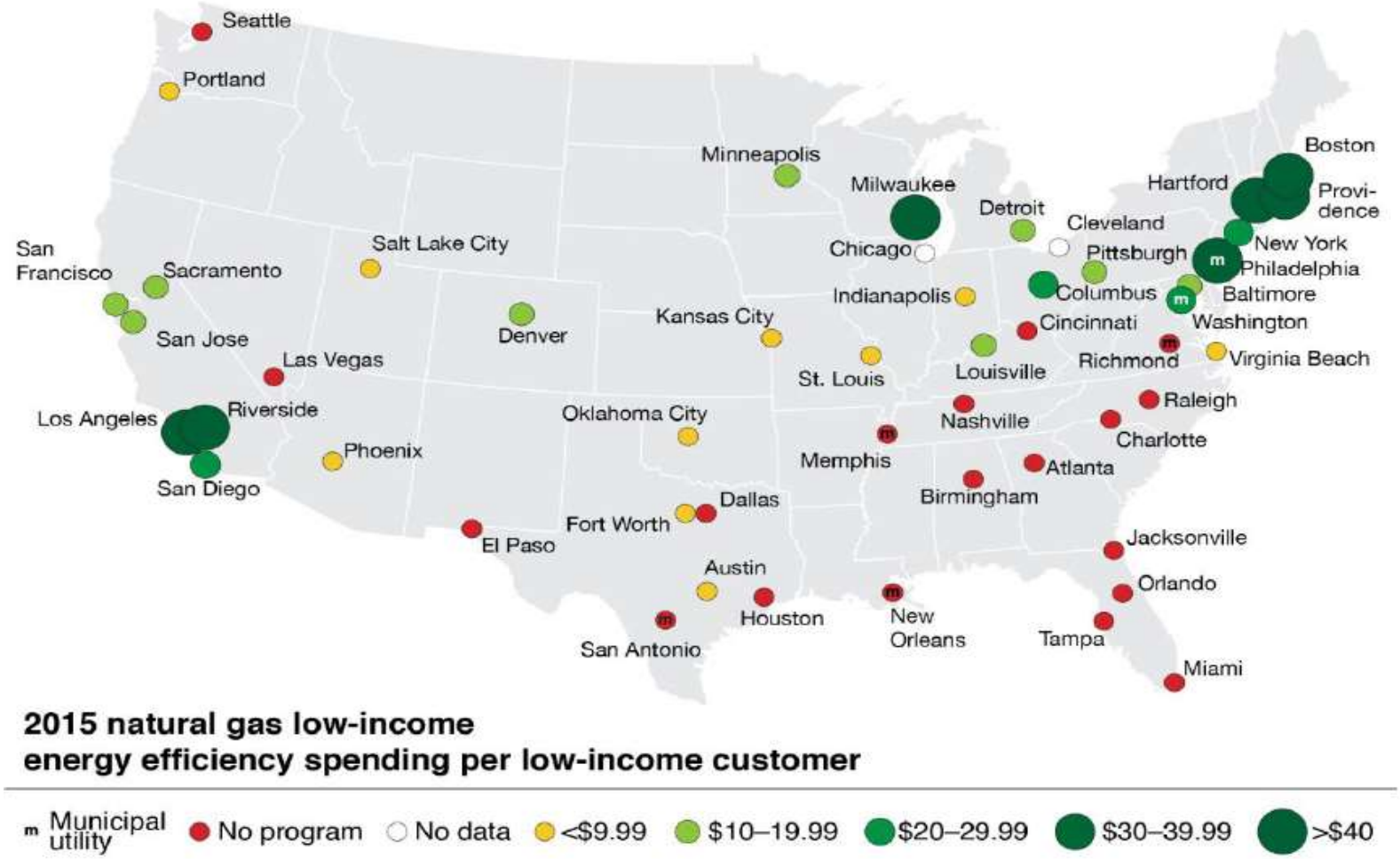
Deeper Dive Surveys & Program Reviews: *Low-Income Programs (cont.)*

- In a 2017 study of the 51 largest cities, ACEEE found significant variations in low-income spending based on $/total low-income customers.
  - Three of the five highest electric $/*total* low-income customers spending levels were in New England (Eversource MA, National Grid RI and Eversource CT).
  - Similarly, the three highest per low-income customer gas spending levels were in New England (National Grid MA, Connecticut Natural Gas and National Grid RI).

Deeper Dive Findings (cont.)



Deeper Dive Findings (cont.)



Deeper Dive Findings (cont.)

Deeper Dive Surveys & Program Reviews: *Low-Income Programs (cont.)*

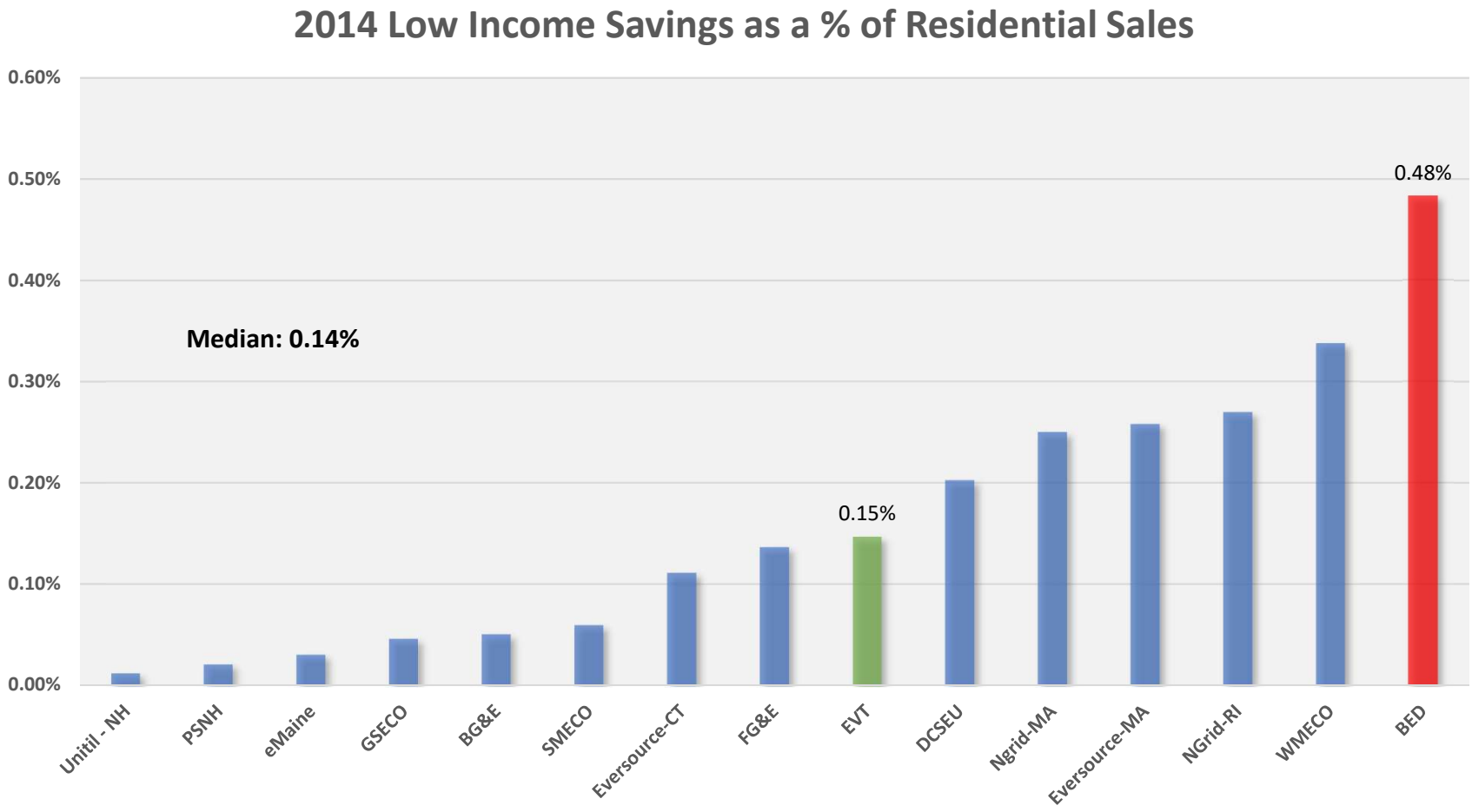
- Interestingly, when viewed from the perspective of spending per low - income program *participant (*not total low-income customers*)*, only one New England PA (National Grid MA Gas) was among the top five electric or gas PA per participant expenditures.
- Looking at savings relative to all low-income customers, the same three New England electric PAs that had the highest spending/customer are in the top five savings/total low-income customers. As are two of the same New England gas PAs (Connecticut Natural Gas and National Grid MA).
- Though none of the electric nor gas New England PAs are among those PAs with the highest savings per program participant.

Deeper Dive Findings (cont.)

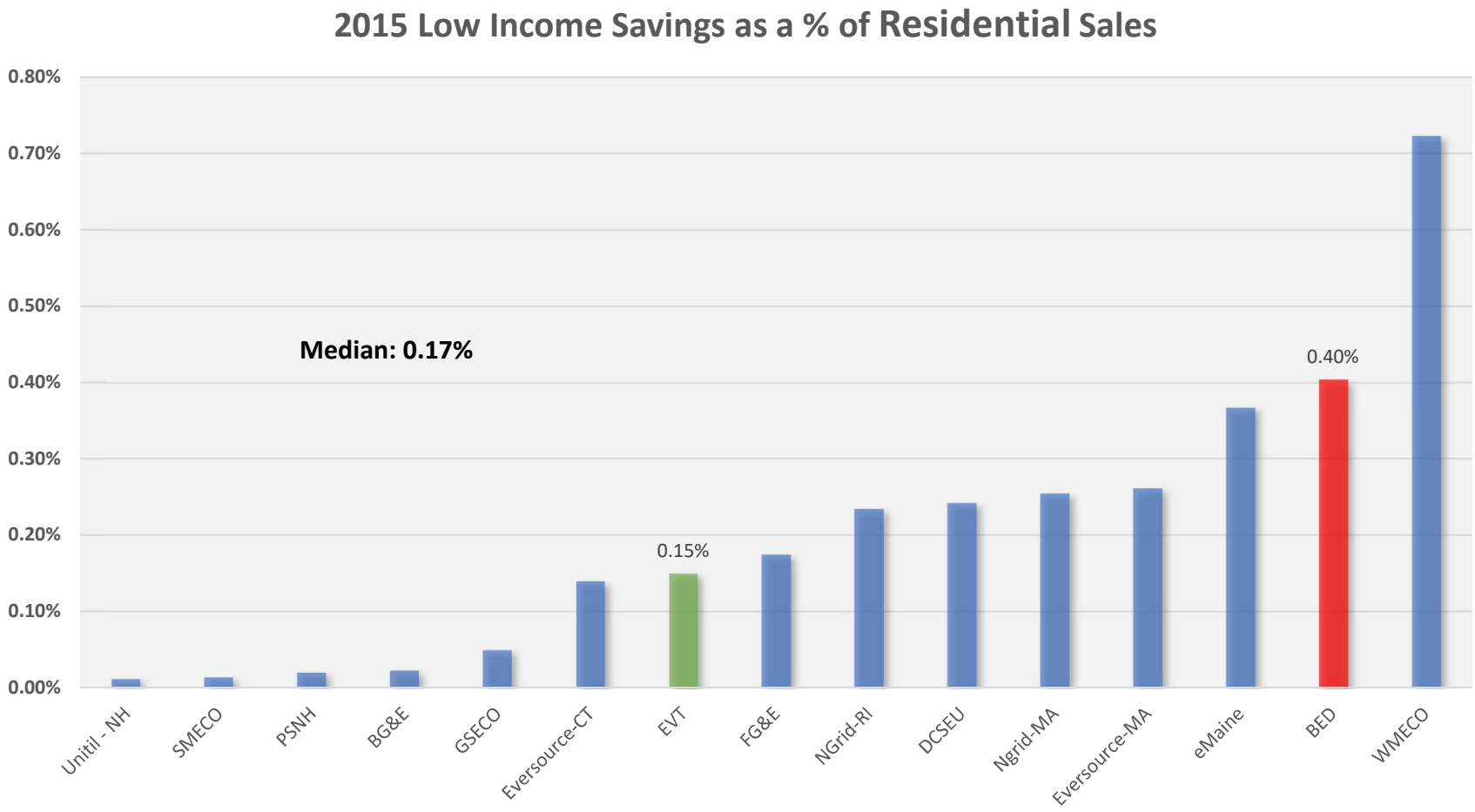
Deeper Dive Surveys & Program Reviews: *Low-Income Programs (cont.)*

- A quantitative analysis of low-income program metrics was completed.
- The Residential sector benchmarking results presented in this report include low-income savings, expenditures and sales
- The following figures examine just low-income savings and budgets.
- However, as low-income sales are not reported to FERC, total Residential sector sales were used as the denominator for certain low-income metrics.

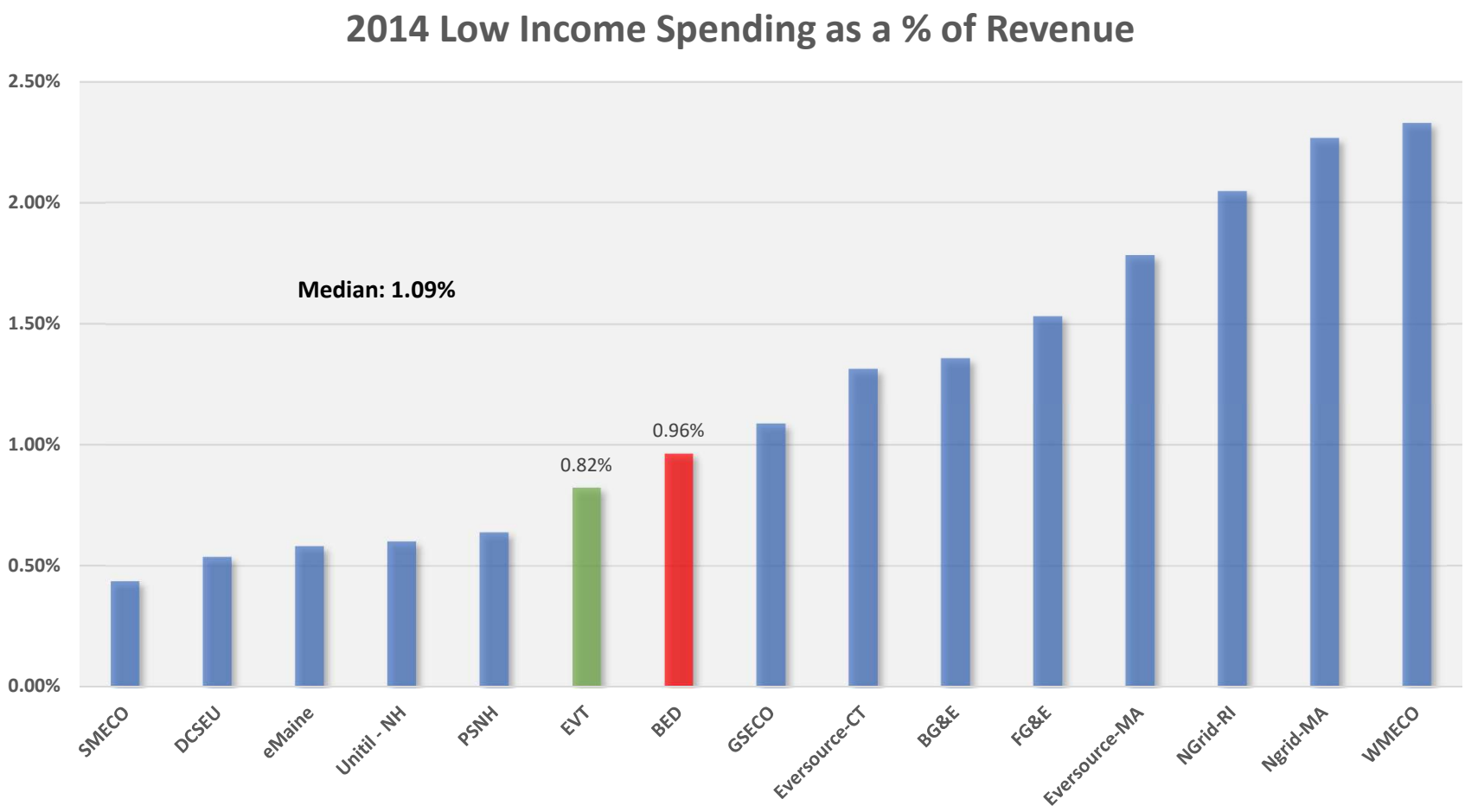
In 2014, EVT's low-income savings as a % of total Residential sales was slightly above the median of 0.14% at 0.15%, while BED was above the median at 0.48%.



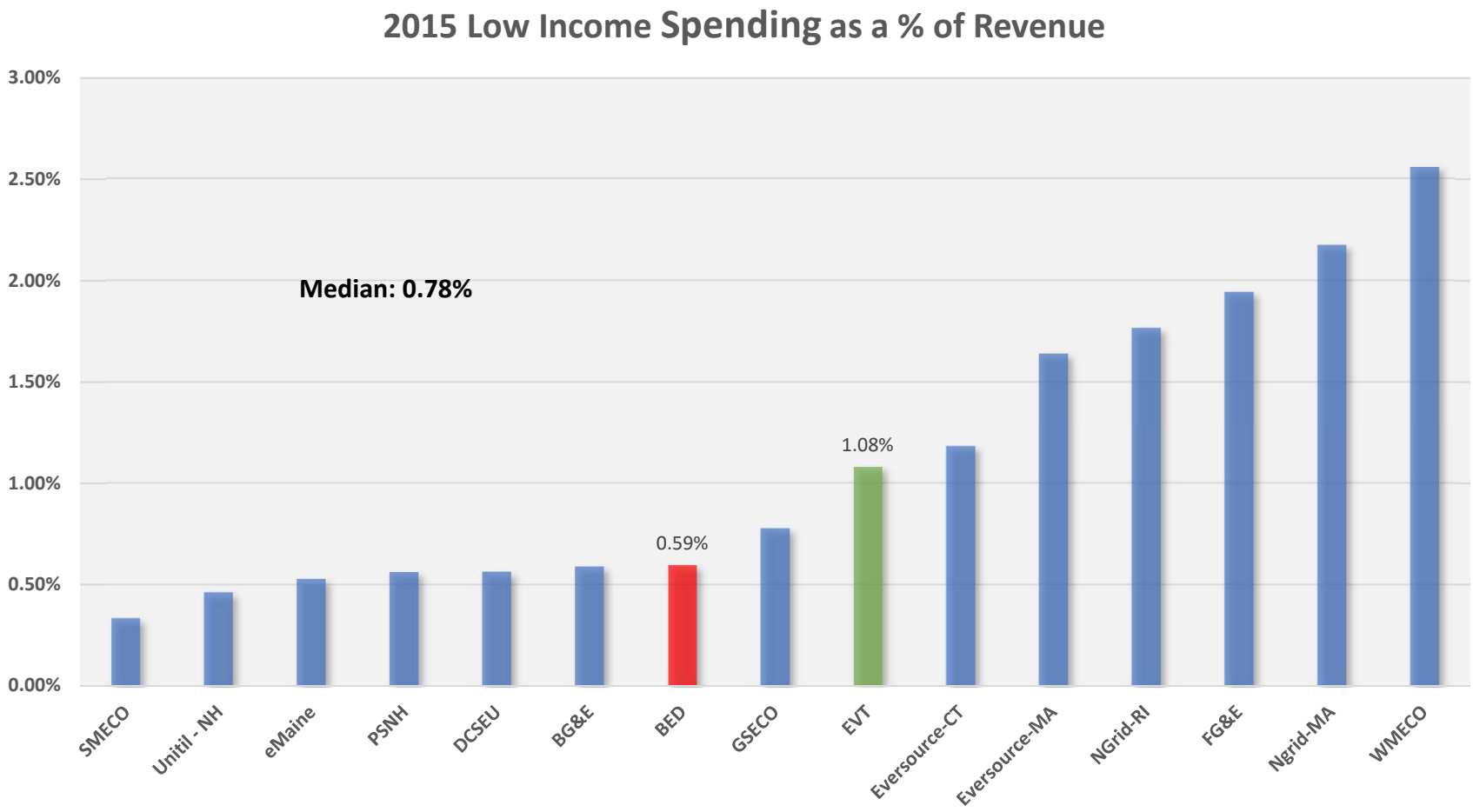
In 2015, EVT's low-income Savings as a % of total Residential sales was close to the median of 0.17% at 0.15%, while BED was above the median at 0.40%.



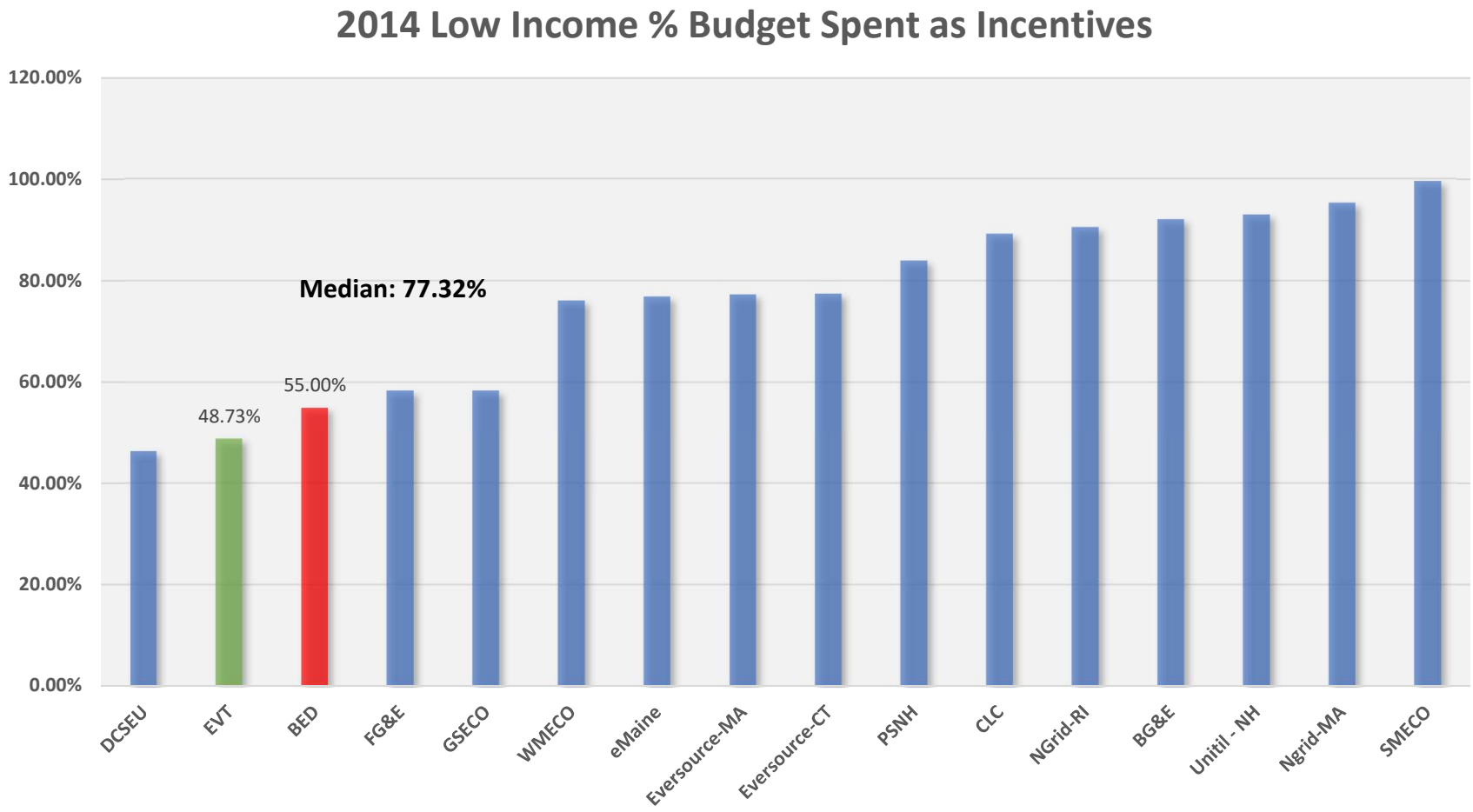
In 2014, EVT and BED both had below median low-income spending as a % of revenue, at 0.82% and 0.96%, respectively.



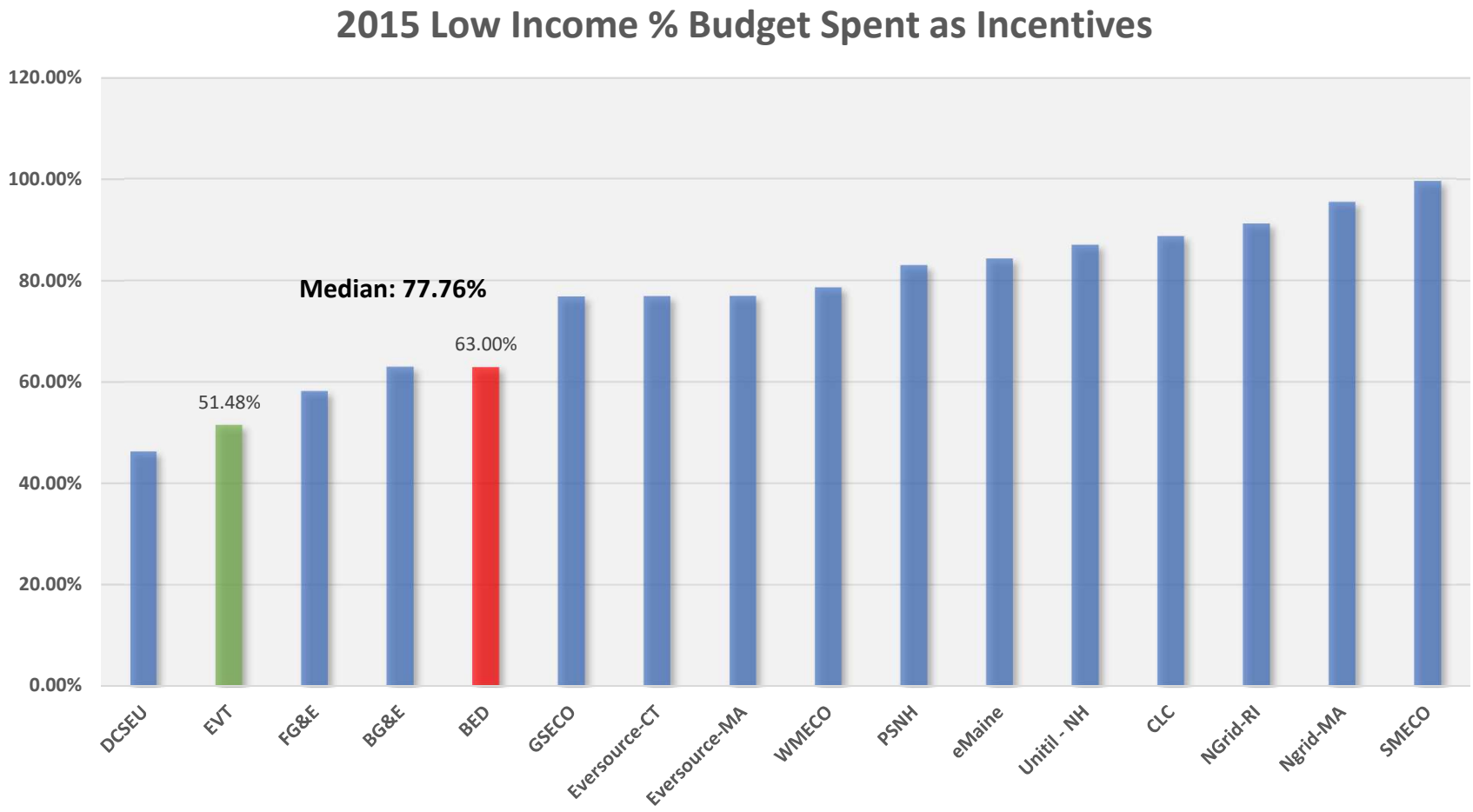
In 2015, EVT's low-income spending as a % of revenue was above the median of 0.78% at 1.08%, while BED was below the median at 0.59%.



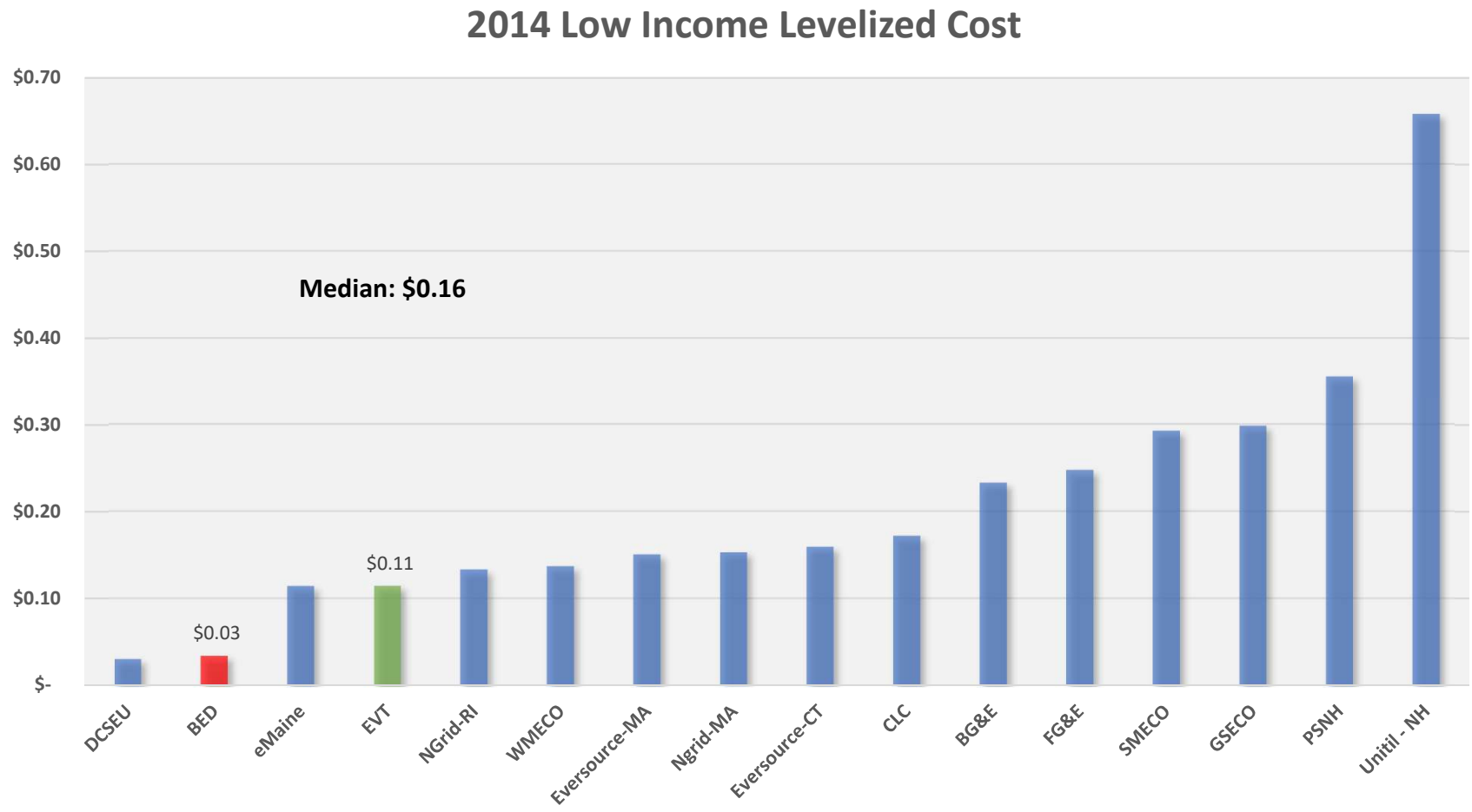
In 2014, EVT and BED both spent a smaller % of their budget on incentives than the median of 77.32%, at 48.72% and 55.00%, respectively



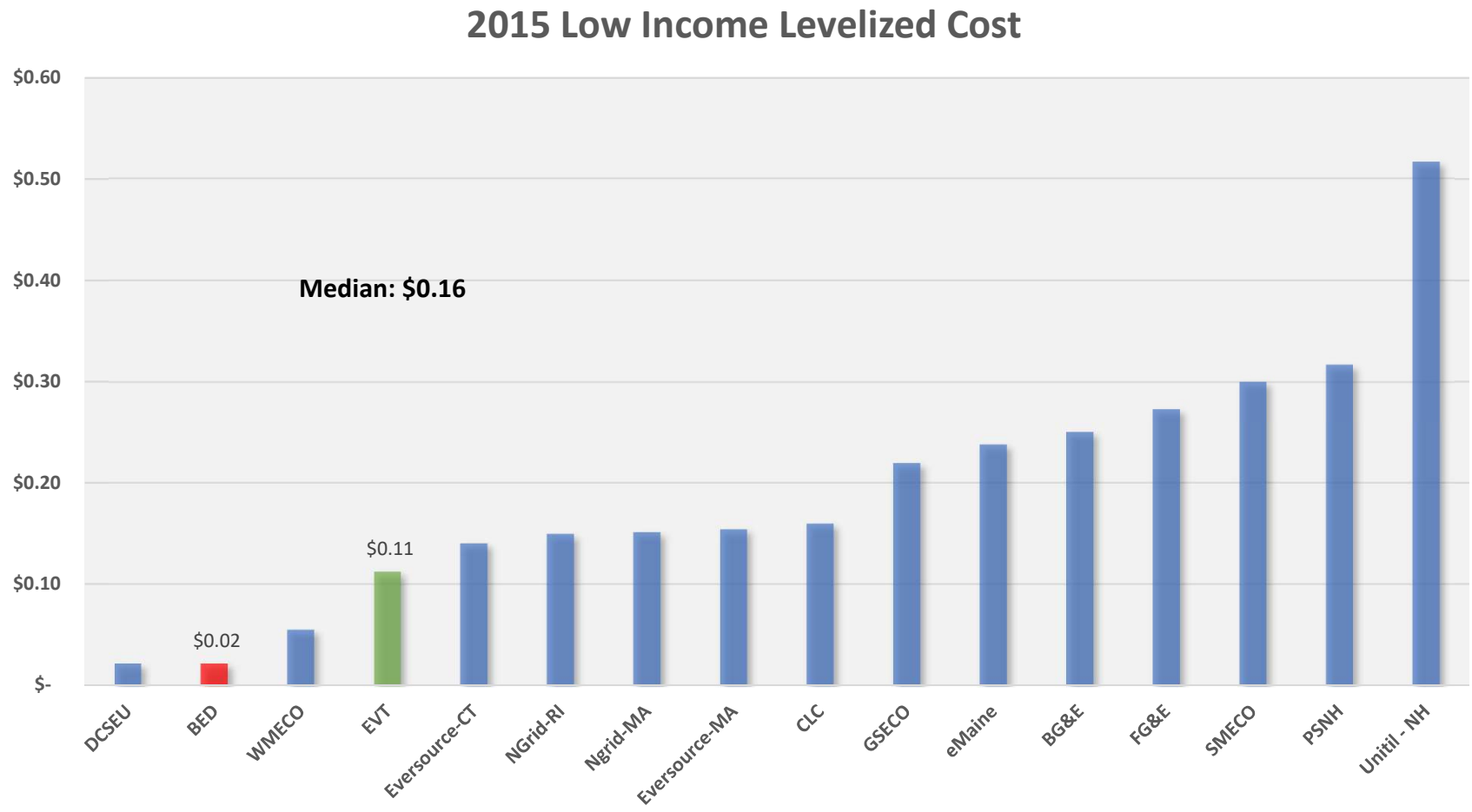
Similarly in 2015, EVT and BED both spent a smaller % of their budget on incentives than the median of 77.76%, at 51.47 % and 63.00%, respectively.



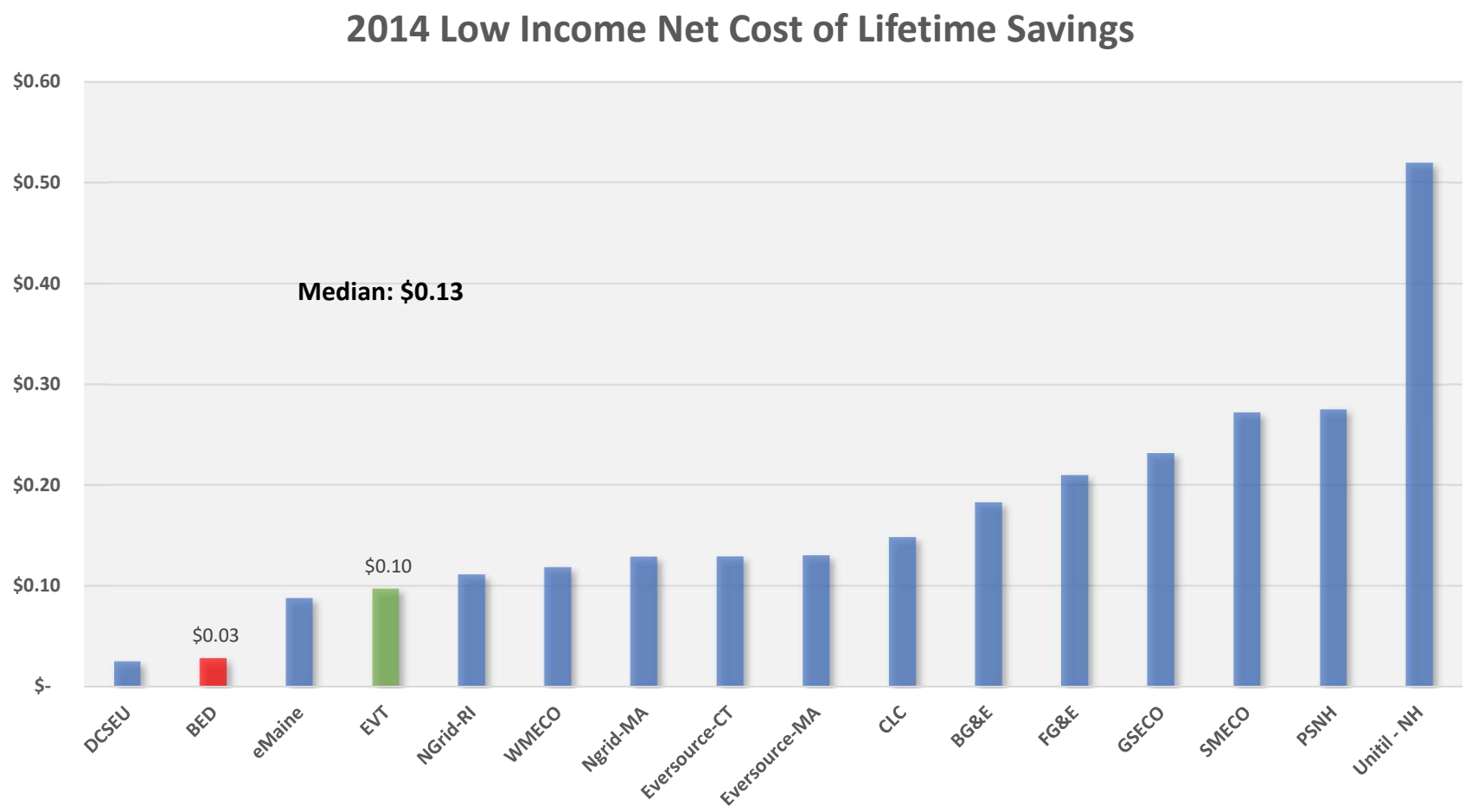
In 2014, both BED and EVT had low-income levelized costs below the median of $0.16, at $0.03 and $0.11, respectively.



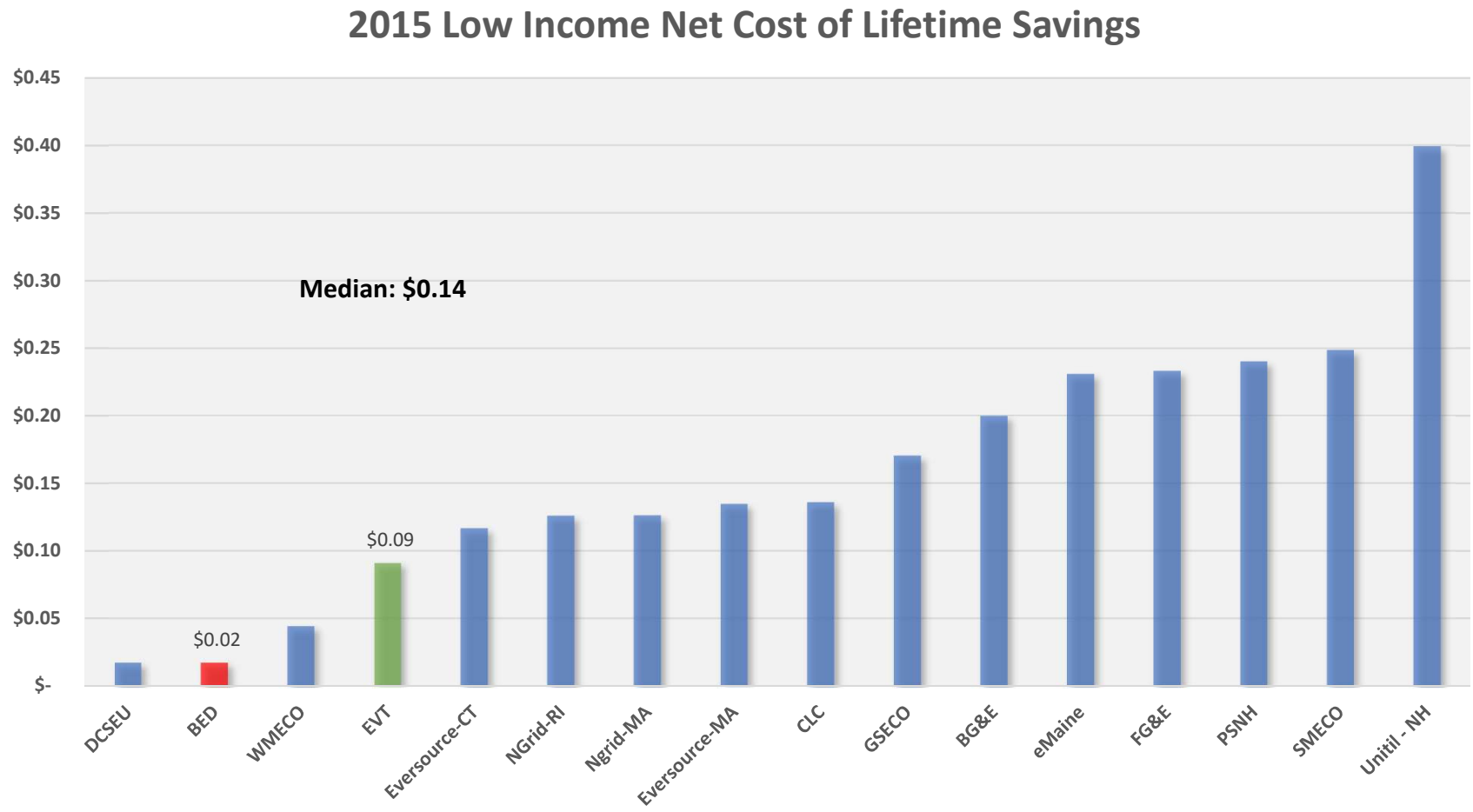
In 2015, both BED and EVT again both had below median low-income levelized costs, at $0.02 and $0.11, respectively.



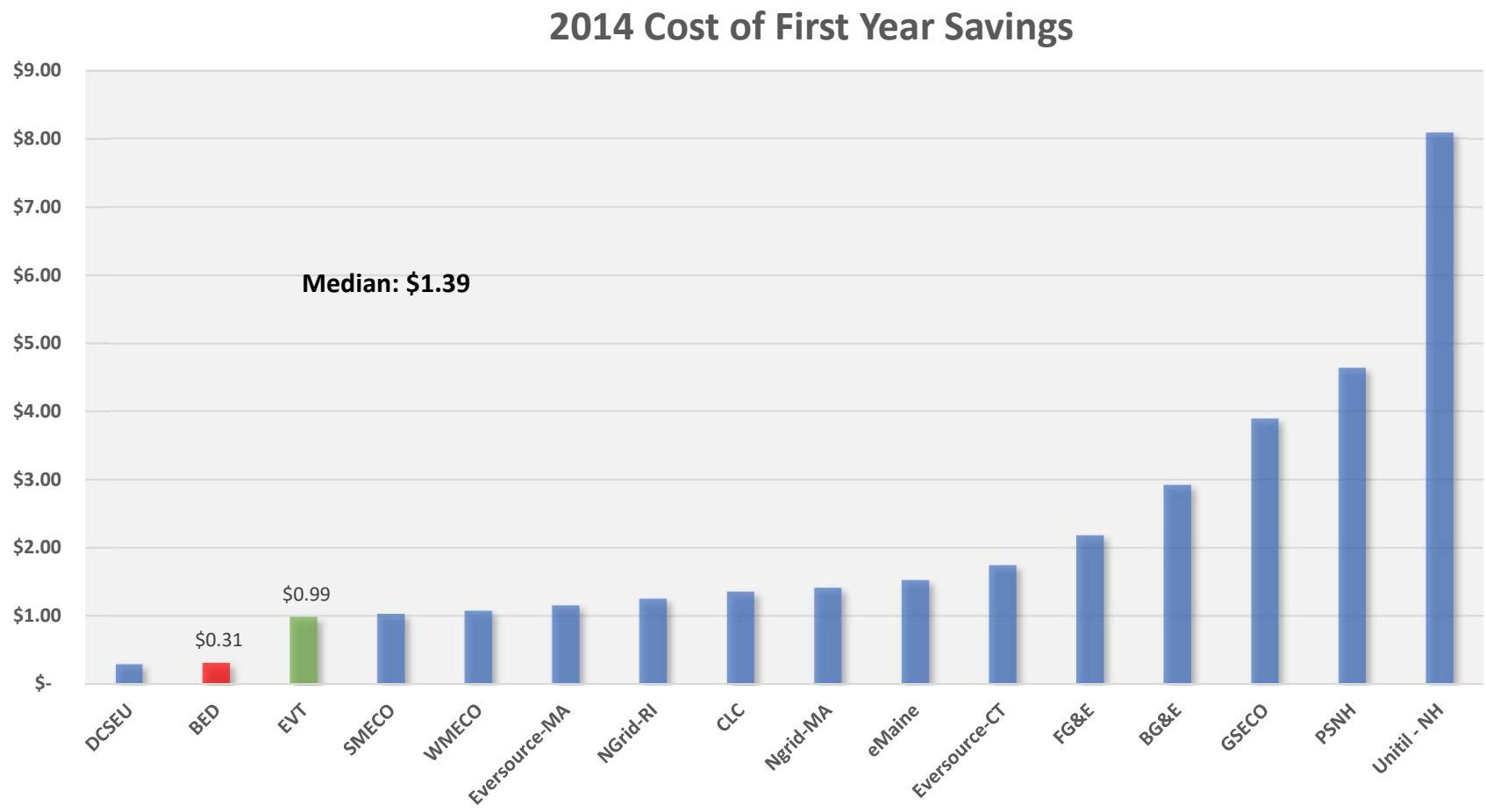
In 2014, BED and EVT both had below median net cost of lifetime savings at $0.03 and $0.10, respectively, compared to the median of $0.13.



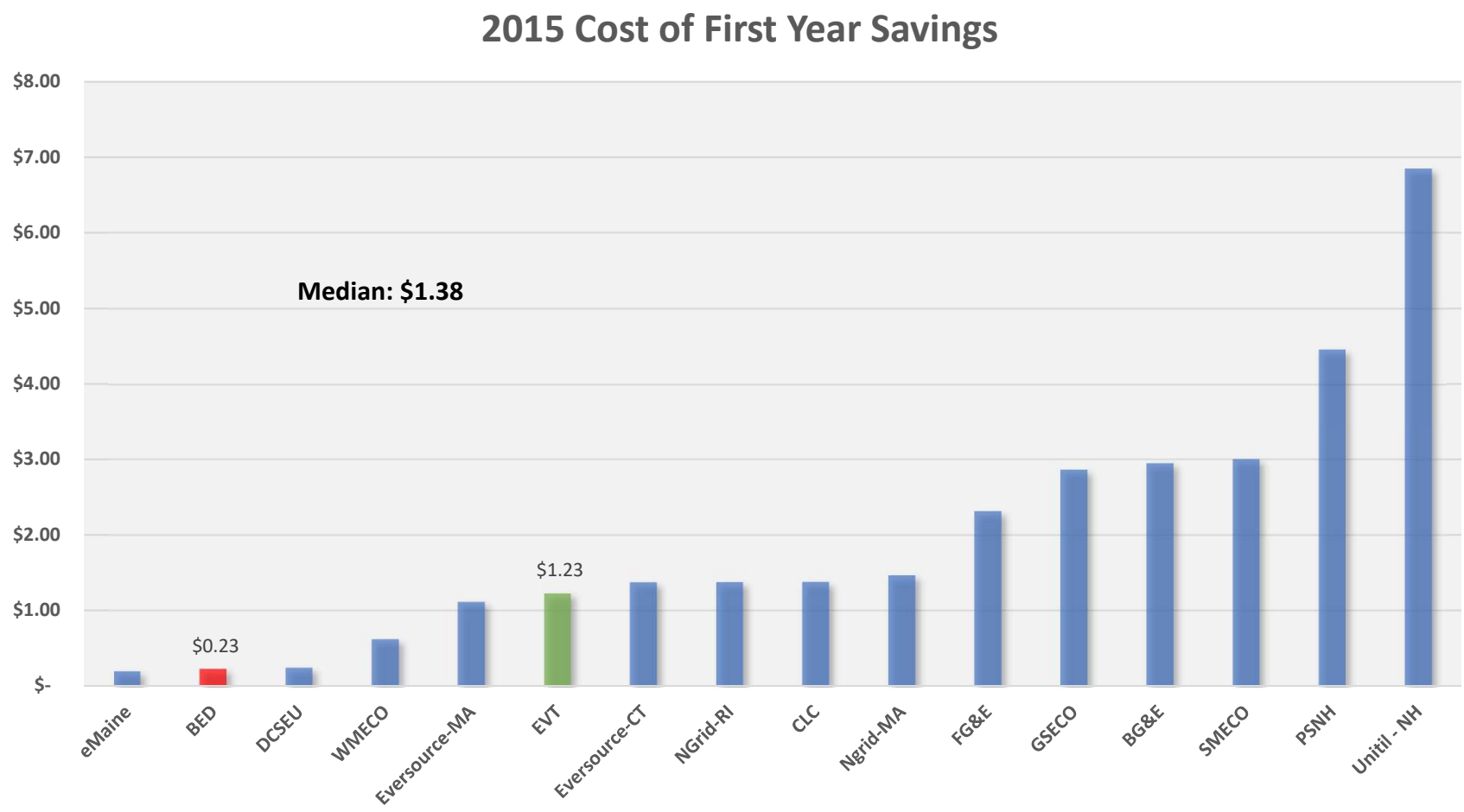
Similarly, in 2015 BED and EVT's low-income net cost of lifetime savings were below the median of $0.14, at $0.02 and $0.09, respectively.



BED and EVT's Low Income costs of first year savings in 2014 were below the median of $1.39, at $0.31 and $0.99, respectively.



In 2015, BED and EVT again had costs of first year savings below the median of $1.38, at $0.23 and $1.23, respectively.



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Section 10: Conclusions

Conclusions

Caveats to Comparative Benchmarking

- **As discussed previously, as well as in the Administrative Cost and Efficiency Memo, care must be taken in comparing benchmarking metrics across PAs.**
- **There are real and significant differences in the ways in which PAs in different states:**
  - Estimate and assign measure lives for the same measures
  - Define administrative and incentive costs
  - Pursue Residential vs. commercial sector savings opportunities
    - Commercial savings can typically be procured at a lower cost
  - Estimate and assign net-to-gross ratios for the same measures
  - Dedicate electric funding to support delivered fuel efficiency in Residential and Low-Income Programs.

Conclusions

Caveats to Comparative Benchmarking (cont.)

- **All of these can have large effects on the values that PAs report out for annual and lifetime savings and for overall and incentive program spending.**
- **Overall and sector level budgets – and hence savings - are constrained in some states to less than all cost-effective energy efficiency.**
  - PAs *may* target measures with low cost of saved energy
- **VGS reporting was not subject to the same type of regulatory review in the 2014-2015 timeframe as were EVT and BED.**

Conclusions

Considerations for Future Benchmarking

- **Explore alternative metrics**
  - All fuel MMBtu savings and cost of savings
  - Savings and spending per household or housing unit
    - Possibly broken out by single family and multifamily
    - Consider separate Residential and Low-Income metrics
- **New Challenges/Opportunities**
  - Inclusion of winter demand savings
  - In many states a growing percentage of efficiency funds will be earmarked for "other" activities.
    - Growth of demand response activities
      - Should these be tracked and reported separately from efficiency activities?
    - Inclusion of fuel switching activities in efficiency programs in MA, RI and CT

Conclusions

Efficiency Vermont Compared to its Benchmarked Peers had:

- **Higher energy efficiency savings at the Portfolio and sector levels.**
- **Higher Portfolio level summer demand savings.**
- **Above median spending as a % of revenues at the Portfolio and sector levels.**
- **Higher annual cost of saved energy.**
- **Lifetime cost of saved energy that were:**
  - Similar at Portfolio level
  - Higher at C&I sector
  - Lower at Residential sector

Conclusions

BED Compared to its Benchmarked Peers had:

- **Higher energy efficiency savings at the Portfolio and sector levels.**
- **Higher Portfolio level summer demand savings.**
- **Above median spending as a % of revenues at the Portfolio and sector levels.**
- **Annual cost of saved energy that were:**
  - Higher at Portfolio and C&I sector
  - Similar at Residential sector
- **Lifetime cost of saved energy that were:**
  - Similar at Portfolio and C&I sector
  - Lower at Residential sector

Conclusions

Total Electric Portfolio

- **EVT's and BED's 2014 energy efficiency programs had higher energy savings compared to most of the organizations benchmarked in this analysis.** EVT's programs saved about 1.8% of baseline sales, while BED's programs saved about 1.6% of baseline sales; considerably above the median savings for the benchmarked organizations of 1.1% of baseline sales.
- **EVT's and BED's first year cost of saved energy in 2014 are greater than the median for the organizations benchmarked in this analysis.** EVT's cost of saved energy was about $0.52/kWh, while BED's cost of saved energy was $0.47/kWh. The median cost of saved energy for the benchmarked organizations was $0.39/kWh.
- **EVT and BED's 2015 energy efficiency program savings were again the higher than the median of organizations benchmarked in this analysis.** EVT's programs saved about 2.1% of baseline sales, while BED's programs saved about 1.8% of baseline sales; compared to the median savings for the benchmarked organizations of 1.3% of baseline sales.
- **EVT's and BED's first year cost of saved energy in 2015 was above the median for the organizations benchmarked in this analysis.** EVT's and BED's cost of saved energy were about $0.45kWh and $0.41/kWh, respectively, while the median cost of saved energy for the benchmarked organizations was $0.36/kWh.

Conclusions

Electric C&I Sector

- **EVT's and BED's 2014 C&I energy efficiency programs had higher energy savings compared to most of the organizations benchmarked in this analysis.** EVT's C&I programs saved about 1.8% of baseline sales, while BED's programs saved about 1.4% of baseline sales; considerably above the median savings for the benchmarked organizations of 0.9% of baseline sales.
- **EVT's and BED's first year C&I cost of saved energy in 2014 are greater than the median for the organizations benchmarked in this analysis.** EVT's C&I cost of saved energy was about $0.52/kWh, while BED's cost of saved energy was $0.48/kWh. The median cost of saved energy for the benchmarked organizations is $0.34/kWh.
- **EVT and BED's 2015 C&I energy efficiency program savings were again higher than the median of the organizations benchmarked in this analysis.** EVT's C&I programs saved about 1.7% of baseline sales, while BED's programs saved about 1.4% of baseline sales; compared to the median savings for the benchmarked organizations of 1.1% of baseline sales.
- **EVT's and BED's first year C&I cost of saved energy in 2015 was above the median for the organizations benchmarked in this analysis.** EVT's and BED's C&I cost of saved energy were about $0.45kWh and $0.41/kWh, respectively, while the median cost of saved energy for the benchmarked organizations was $0.36/kWh.

Conclusions

Electric Residential Sector

- **EVT's and BED's 2014 Residential energy efficiency programs had higher energy savings compared to most of the organizations benchmarked in this analysis.** EVT's Residential programs saved about 1.8% of baseline sales, while BED's programs saved about 2.2% of baseline sales; considerably above the median savings for the benchmarked organizations of 1.4% of baseline sales.
- **EVT's and BED's first year Residential cost of saved energy in 2014 are greater than the median for the organizations benchmarked in this analysis.** EVT's cost of saved energy was about $0.51/kWh, while BED's cost of saved energy was $0.45/kWh. The median cost of saved energy for the benchmarked organizations is $0.43/kWh.
- **EVT and BED's 2015 Residential energy efficiency program savings were again higher than the median of the organizations benchmarked in this analysis.** EVT and BED's Residential programs both saved about 2.8% of baseline sale; compared to the median savings for the benchmarked organizations of 1.8% of baseline sales.
- **EVT's and BED's first year Residential cost of saved energy in 2015 were both at or close to the median for the organizations benchmarked in this analysis.** EVT's and BED's cost of saved energy were about $0.42kWh and $0.41/kWh, respectively, while the median cost of saved energy for the benchmarked organizations was $0.41/kWh.

Conclusions

VGS Compared to its Benchmarked Peers had:

- **Energy efficiency savings that were:**
  - Higher at the Portfolio level
  - Similar (2014) or lower (2015) at the C&I sector
  - Similar at the Residential sector
- **Lower median spending as a % of revenues.**
- **Lower annual cost of saved energy at Portfolio and C&I sector**
- **Lower Lifetime cost of saved energy at Portfolio and C&I sector**

Conclusions

Total Gas Portfolio

- **VGS's 2014 energy efficiency programs had slightly higher energy savings compared to most of the organizations benchmarked in this analysis.** VGS's programs saved about 0.9% of baseline sales, compared to median savings of 0.8% of baseline sales for the benchmarked organizations.
- **VGS's first year cost of saved energy in 2014 were less than half of the median for the organizations benchmarked in this analysis.** VGS's cost of saved energy was about $2.46/therms. The median cost of saved energy for the benchmarked organizations was $5.22/therm.
- **VGS's 2015 energy efficiency programs again had slightly higher energy savings compared to most of the organizations benchmarked in this analysis.** VGS's programs saved about 0.7% of baseline sales, compared to median savings of 0.6% of baseline sales for the benchmarked organizations.
- **VGS's first year cost of saved energy in 2015 were just less than half of the median for the organizations benchmarked in this analysis.** VGS's cost of saved energy was about $2.72/therms. The median cost of saved energy for the benchmarked organizations was $5.38/therm.

Conclusions

Gas C&I Sector

- **VGS's 2014 C&I energy efficiency programs had energy savings equal to most of the organizations benchmarked in this analysis.** VGS's C&I programs saved about 0.9% of baseline sales, the same as the median savings of 0.9% of baseline sales for the benchmarked organizations.
- **VGS's first year C&I cost of saved energy in 2014 was nearly a third of the median for the organizations benchmarked in this analysis.** VGS's C&I cost of saved energy was about $1.11/therms. The median cost of saved energy for the benchmarked organizations was $3.01/therm.
- **VGS's 2015 C&I energy efficiency programs had slightly lower energy savings compared to most of the organizations benchmarked in this analysis.** VGS's C&I programs saved about 0.6% of baseline sales, compared to median savings of 0.7% of baseline sales for the benchmarked organizations.
- **VGS's first year C&I cost of saved energy in 2015 was less than a third of the median for the organizations benchmarked in this analysis.** VGS's C&I cost of saved energy was about $0.95/therms. The median cost of saved energy for the benchmarked organizations was $3.43/therm.

Conclusions

Gas Residential Sector

- **VGS's 2014 Residential energy efficiency programs had energy savings equal to most of the organizations benchmarked in this analysis.** VGS's Residential programs saved about 0.7% of baseline sales, the same as the median savings of 0.7% of baseline sales for the benchmarked organizations.
- **VGS's first year Residential cost of saved energy in 2014 was less than the median for the organizations benchmarked in this analysis.** VGS's Residential cost of saved energy was about $5.63/therms. The median cost of saved energy for the benchmarked organizations was $7.87/therm.
- **VGS's 2015 Residential energy efficiency programs had energy savings equal to most of the organizations benchmarked in this analysis.** VGS's Residential programs saved about 0.6% of baseline sales, the same as the median savings of 0.6% of baseline sales for the benchmarked organizations.
- **VGS's first year Residential cost of saved energy in 2015 was slightly less than the median for the organizations benchmarked in this analysis.** VGS's Residential cost of saved energy was about $7.24/therms. The median cost of saved energy for the benchmarked organizations was $7.66/therm.

ENERGY FUTURES GROUP

Appendix A: Administrative Cost and Efficiency Report

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Administrative Cost and Efficiency Report A Component Part of Benchmarking 2014-2015 Demand Side Management Results for Vermont

Prepared for the Vermont Department of Public Service

September 27, 2018

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Introduction

This report benchmarks the three current Vermont Energy Efficiency Utilities (EEUs) – Efficiency Vermont (EVT), Burlington Electric Department (BED), and Vermont Gas Systems (VGS) – against other Northeast and Mid-Atlantic energy efficiency program administrators (PAs) on a number of metrics related to administrative costs. This benchmarking allows for comparison of how different program administrators in the region allocate program costs in their delivery of efficiency services. Program expenditures for both 2014 and 2015 are examined. These metrics, when viewed in context with other measures of PA performance, provide a means to assess the administrative efficiency of energy efficiency program implementation.

Vermont had two electric EEUs in 2014 and 2015 – BED and EVT. Those two electric EEUs are benchmarked separately from Vermont Gas, which is benchmarked against other New England and Mid-Atlantic gas PAs. Note that in 2014 and 2015, VGS was not operating as an EEU, as discussed in more detail below.

Although VGS has offered energy efficiency programs to its customers for over 20 years, it was not officially appointed as an "Energy Efficiency Utility" (EEU) by the Vermont Public Utility Commission (PUC) until program year 2016 and, after a two-year transition period, became a full-fledged EEU in 2018[1]. As an EEU, VGS will deliver programs under budget and performance targets established through a PUC stakeholder process and program results will be subject to independent verification. Prior to 2016, VGS determined its own annual energy efficiency program budget, did not have performance targets established by the PUC, and its annual savings claim was not audited for accuracy by a third party. As such, in the current study, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

This Administrative Cost benchmarking effort is part of a larger benchmarking effort underway which will be completed in 2018. The findings from this Administrative Cost benchmarking is intended to help inform the eventual development of appropriate Quality Performance Indicators (QPIs) related to administrative cost spending for Vermont's EEUs. Considerations for developing QPIs are discussed in more detail below. For the 2018-2020 EEU performance period the PUC included a minimum performance requirement (MPR) for the EEUs that requires the EEUs to do the following[2]:

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[1] For program year starting in 2018, VGS had its energy efficiency program budgets and performance goals established in a PUC Demand Resource Plan (DRP) proceeding along with the two electric EEUs. VGS's 2016 and 2017 transition period budgets and performance goals were established outside of a DRP process.

[2] The administrative efficiency MPR for BED and VGS was approved with the language included in this memo in PUC proceeding EEU 2016-03 on October 12, 2017. The same MPR was approved by the PUC for EVT in the same proceeding but in a different Order dated November 9, 2017. EVT's administrative efficiency MPR is slightly different than BED and VGS's. However, the intent is the same. EVT's MPR reads as follows "Clearly define and

- Part A: Define all administrative costs and provide the costs for the 2015-2017 period.
- Part B: … submit a proposal on how these costs will be tracked and reported including a metric on the ratio of incentive costs and total administrative costs as a percent of the total budget for the current performance period.

track all administrative costs including incentive and non-incentive costs associated with EVT's delivery of services under the Order of Appointment".

Executive Summary

Quantitative Findings

This report provides information and supporting evidence to inform decisions in regard to next steps in the QPI process, a potential statewide administrative cost definition, which cost categories might be included, and the possible value of requiring additional performance metrics.

EVT, BED, and VGS annual reports document that each entity defines (and reports) administrative costs differently. In addition, Northeast Energy Efficiency Partnerships Regional Energy Efficiency Database, the PUC's annual audit of the Vermont Energy Efficiency Fund, and the PUC's triennial cost effectiveness audit also use different definitions of administrative costs. For the Vermont EEUs, the PUC, PSD, legislature, and other interested stakeholders, there would be value in adopting a common and consistent definition and reporting format for administrative costs. In addition to the comparison of how different program administrators in the region allocate program costs in their delivery of efficiency services, this memo also provides information and supporting evidence to inform decisions on cost categories to potentially include in a statewide administrative cost definition, as well as the possible value of requiring additional performance metrics.

Table 1 and Table 2 summarize the key quantitative findings from this benchmarking analysis. Values are provided for EVT, BED and VGS for both 2014 and 2015. In addition, for each year, the mean (average) and median values of the comparison groups of the Northeast and Mid-Atlantic PAs used in the benchmarking are also provided to provide context for the Vermont program administrators' metrics. The utilities in the comparison groups are listed in the Methodology Section below.

Table 1: Summary of Administrative Efficiency Metrics for Vermont Electric EEUs

	2014	2015
Administrative spending as a % of total spending		
Mean of comparison group (electric)	11%	13%
Median of comparison group (electric)	9%	12%
BED	21%	15%
EVT	13%	20%
Non-incentive spending as a % of total spending		
Mean of comparison group (electric)	28%	28%
Median of comparison group (electric)	26%	27%
BED	28%	25%
EVT	51%	51%
Ratio of non-incentive spending to incentive spending		
Mean of comparison group (electric)	0.44	0.45
Median of comparison group (electric)	0.35	0.37
BED	0.39	0.33
EVT	1.06	1.05
Cost of savings		
Mean ($/annual kWh) of comparison group (electric)	$0.34	$0.34
Median ($/annual kWh) of comparison group (electric)	$0.34	$0.36
BED ($/annual kWh)	$0.47	$0.41
EVT ($/annual kWh)	$0.52	$0.45

Note: Budget and spending amounts obtained from the NEEP REED database. EVT and BED spending adjusted to include components of their non-resource acquisition (NRA) costs that were not included in their REED reporting.

Table 2: Summary of Administrative Efficiency Metrics for Vermont Gas

	2014	2015
Administrative spending as a % of total spending		
Mean of comparison group (gas)	13%	12%
Median of comparison group (gas)	9%	16%
VGS	36%	23%
Non-incentive spending as a % of total spending		
Mean of comparison group (gas)	23%	28%
Median of comparison group (gas)	24%	26%
VGS	38%	45%
Ratio of non-incentive spending to incentive spending		
Mean of comparison group (gas)	0.31	0.44
Median of comparison group (gas)	0.31	0.35
VGS	0.61	0.82
Cost of savings		
Mean ($/ annual therm) of comparison group (gas)	$4.28	$5.03
Median ($/annual therm) of comparison group (gas)	$3.96	$4.50
VGS ($/annual therm)	$2.46	$2.72

Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Defining Administrative Costs

Accurately benchmarking administrative costs depends on the quality of the data used to perform the analysis. During this benchmarking study it became apparent that each benchmarked utility did not define, account, or report its administrative cost data the same way. This has highlighted the value of adopting a consistent definition of administrative costs going forward. However, the NEEP REED data source used for the analysis in this study appears to be the best available public source for the region. While the data is not perfect, some high-level quantitative analysis and qualitative observations can be made. It is important to note that the quantitative analysis and associated results should be put into

context in relation to how the various entities define and report administrative costs to REED. Some of the nuances are best understood and explained for the Vermont EEUs. For example, for the purposes of reporting to REED, EVT and BED did not include any of the Non-Resource Acquisition (NRA) costs (described in more detail below) and only reported administrative costs associated with the resource acquisition (RA) portion of the operating budget. Other jurisdictions do not have NRA costs as separate cost categories (and VGS did not have distinct NRA costs for the years 2014 and 2015). Therefore, these jurisdictions and VGS would have been expected to include costs that are similar to NRA costs in their reporting to REED. To ensure the most complete analysis EVT and BED's NRA costs were added into the REED data that was used for this benchmarking analysis.

Regardless of the nuances and inconsistencies in the data, the following observations were made about EVT, BED, and VGS's administrative costs compared to other Program Administrators (PA's) benchmarked.

- In 2014 and 2015 both Efficiency Vermont and Burlington Electric spent above average on administrative costs as a percent of total efficiency spending compared to the average of comparison Northeast and Mid-Atlantic PAs.
- In 2014, Burlington Electric's non-incentive spending as a percent of total spending was average, while Efficiency Vermont's non-incentive spending was above average. In 2015, Burlington Electric's non-incentive spending was below average and EVT's was above average.
- Efficiency Vermont and Burlington Electric had costs of saved energy ($/annual kWh saved) that were above average. These results suggest that there may be opportunities for Burlington Electric and Efficiency Vermont to reduce administrative and non-incentive costs to reduce their total cost of saved energy.
- Vermont Gas had above average administrative and non-incentive costs as a percent of total spending in 2014 and 2015 when compared to other gas PAs in the region. However, VGS had below average costs of saved energy ($/annual therm saved) relative to comparison gas PAs. This suggests that although Vermont Gas's administrative costs were above average, they were not necessarily a clear indicator that program funding was spent inefficiently. As previously mentioned, VGS savings numbers were not verified in years 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings.

One key finding of this study is that different definitions of administrative costs have been used by different program administrators and/or third parties, e.g., NEEP's Regional Energy Efficiency Database (REED). Further, some of these definitions have changed over time. For future benchmarking efforts, it is important that a consistent definition be developed and used consistently over time.

As a starting point for developing a consistent EEU definition of administrative costs, a subset of the Vermont administrative cost definition used in prior PUC annual audit reporting should be considered. Inclusion of the proposed cost categories below are based on review and comparison of the definitions and cost categories of the different administrative cost definitions in Appendix A, consideration of budget cost categories in other states, and the definition used by REED; as well as considering what

costs might be excluded and considered as program implementation costs. If performance incentives or mark-up fees (performance incentives and operations fees) are not identified as administrative costs it is recommended that they be identified in a stand-alone category, so these costs can be easily identified and tracked over time.

- General Administration
- Information Technology
- Planning and Reporting
- Policy and Public Affairs
- Additional compensation or margin (including performance incentives and operations fees)

While adopting such a definition would not necessarily facilitate direct comparisons with the REED data against out-of-state peers, Vermont stakeholders may determine that a Vermont-specific definition of administrative cost provides better alignment with state policy goals. However, carefully defining the cost categories to be reported in Vermont would potentially allow different cost categories to be aggregated to address differing definitions of administrative and non-incentive costs, such as those used by REED. The Department and the EEUs should review and discuss the costs and timing of providing additional cost reporting granularity. Once agreed to, or otherwise approved by the PUC, any administrative cost definition should ideally be used consistently across all EEUs and over time to facilitate future benchmarking efforts.

Next Steps

Benchmarking provides useful information to regulators and others in assessing the operations of efficiency program administrators. This report identified a number of areas for possible improvement in subsequent benchmarking efforts and the development of QPIs in Vermont. To this end, the Department, in consultation with the EEUs and other interested stakeholders, should consider the following next steps to facilitate future benchmarking efforts.

- Adopt a consistent definition of administrative costs for all EEUs and define the level of reporting granularity to allow all cost data to be aggregated to meet differing definitions. For example, to address possible differences in how Vermont and REED define administrative costs. For higher-level reporting categories consider ease of rolling up costs as either direct or indirect costs.
- Determine whether RA and DSS/NRA cost allocations and reporting should be retained. If they are, develop and provide explicit guidance as to how program costs are to be allocated to each of these two higher level cost reporting categories.
- Carefully define the components for each metric considered as a potential QPI, possibly informed by work in other jurisdictions, and determine what changes need to be made to each Vermont EEU's cost category definitions and reporting. If the necessary data are not currently reported by the Vermont EEUs, ascertain the costs and time involved for the EEUs to develop the necessary budget tracking and reporting systems.
- Review the possible QPIs and specify which are suitable to be proposed to the PUC and subsequently reported on by the Vermont EEUs. A single metric to fully assess EEU operating

performance may be insufficient. Administrative cost percentage, non-incentive cost percentage, and cost of savings metrics all measure different, though overlapping, aspects of operating programs efficiently. To provide the most comprehensive assessment of program operations, multiple metrics are appropriate.

Methodology

To analyze administrative costs, EFG/Optimal used data publicly available in Northeast Energy Partnership's (NEEP) Regional Energy Efficiency Database (REED). Although REED provides a definition for administration costs, some program administrators did not use the same expenditure categories listed in REED and/or allocated their costs differently across programs. Because spending in various cost categories were self-reported by program administrators, some program administrators may not have adjusted administrative costs to reflect the definition provided in REED. Values in the analysis were used as reported in REED and the accuracy of self-reported costs by different jurisdictions has not been verified. Despite the potential challenges related to definitions and self-reporting, the REED database provides a single, consistent source of data and the closest "apples to apples" comparison available. These data can therefore effectively be used to inform program benchmarking and for other analysis and research purposes.

The comparison PAs used in this analysis were selected in consultation with Public Service Department staff as part of a larger benchmarking study of Vermont Energy Efficiency Utilities. For some of the organizations selected as part of the larger benchmarking study, administrative costs were not reported in REED. Those organizations were excluded from the analysis presented in this memo. To select the group of similar peer organizations, numerous factors were considered, including climate, type of program administrator, fuel mix, customer demographics, funding levels, program maturity, and savings targets. The selected electric peer organizations overlap with those used in a prior 2011 and 2012 program benchmarking study, particularly those in the Northeast.[3] Both this study and the prior study leveraged the REED database. Note that the earlier study did not look at administrative costs directly, but rather focused on efficiency program budget allocations between incentive vs. non-incentive costs (which this study does also).[4] Additionally, this earlier study did not benchmark gas utility efficiency activities, as VGS was not an EEU at the time. Finally, the peer groups used for the 2014 and 2015 comparisons were largely, but not completely, identical. In a few cases, a PA did not report the full set of program cost data to REED in both years and was excluded from the analysis in the year in which its reported data was incomplete. The utilities in the comparison groups are listed below.

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[3]Benchmarking 2011 and 2012 Demand Side Management Results for Efficiency Vermont and Burlington Electric Department – Standard Analysis. Prepared for: Vermont Public Service Department. Navigant Consulting. July 17, 2014.

[4] Non-incentive costs include all PA costs other than incentives paid directly to program participants. Administrative costs are a subset of non-incentive costs. Non-incentive costs that are typically not included in administrative costs may include, but are not limited to, cost categories such as research and evaluation and marketing.

Table 3: Utilities in Comparison Groups

Electric	Gas
Baltimore Gas and Electric (BG&E)	District of Columbia Sustainable Efficiency Utility (DCSEU)
	Efficiency ME
(Delaware) Department of Natural Resources and Environmental Control (DNREC)	Eversource CT
District of Columbia Sustainable Efficiency Utility (DCSEU)	Eversource MA
Efficiency ME	National Grid (NGrid) MA
National Grid (NGrid) MA	National Grid (NGrid) RI
National Grid (NGrid) RI	Orange and Rockland (O&R)
NSTAR MA	Rochester Gas & Electric (RG&E)
Orange and Rockland (O&R)	Unitil NH
Public Service of New Hampshire (PSNH (Eversource))	
Rochester Gas & Electric (RG&E)	
Southern Maryland Electric Cooperative (SMDEC)	
Unitil NH	
WMECO MA	

Note, that as part of this benchmarking, the EVT and BED budgets were adjusted to ensure comparability with the non-VT efficiency program administrators. The EVT and BED budgets reported to REED included only Resource Acquisition (RA) costs but excluded Non-Resource Acquisition Costs (NRAs). As discussed more fully below, the EEUs' NRA costs were added to the REED reported budget amounts (some portions of which were allocated to the administrative cost category, based on the REED definition.)

To further assess the administrative costs reported by the Vermont electric EEUs and Vermont Gas to the REED database, we reviewed annual reports and had personal communication with representatives from the Vermont organizations. This follow-up information provided more detailed information about what efficiency program costs were and currently are considered administrative in Vermont. Definitions are included as a table in Appendix A and further discussed in the Administrative Cost Definitions section of this memo.

Administrative Cost Definitions

This section provides the definition of administrative costs used by the NEEP REED database, the data source used for the quantitative analysis included later in this memo. It also presents the definitions used by two Vermont PUC auditors, the Vermont EEUs, and Vermont Gas in 2014 and 2015. A summary of Vermont administrative costs definitions and descriptions of costs reported to REED can be found in Appendix A. As described below, each entity defines and reports administrative costs differently.

NEEP REED Database

REED defines Program Administration Costs as:

Program administration and costs associated with implementation of programs, including direct installation costs, program implementation contractor services, not including program marketing cost.

Not included in this administration cost category are costs for:

- Customer Rebates or Incentives
- Performance Incentives
- Research and Evaluation
- Other[5]

This definition is the one participating program administrators are asked to use for reporting their administration costs to the REED database. However, it cannot be verified that PAs are consistently using this definition when reporting to REED. For example, Massachusetts includes at least some of its direct installation costs for residential and low-income measures in its incentive cost category, not in its program administration cost category, as per REED (Appendices C and D).

Energy Information Agency Definition (EIA) Definition of Direct and Indirect Costs

While not used directly in the benchmarking below, the EIA definition of direct and indirect costs may help identify what specifically is not an administrative cost.[6]

- **Direct utility cost:** A utility cost that is identified with one of the DSM program categories (e.g. Energy Efficiency or Load Management).

- **Indirect utility cost:** A utility cost that may not be meaning fully identified with any particular DSM program category. Indirect costs could be attributable to one of several accounting cost categories (i.e., Administrative, Marketing, Monitoring evaluation, Utility-

[5] The "other" expenditure category may include costs such as technical support expenditures and training funds. Or, in instances when program expenditures could not be broken out by REED expenditure categories, some PAs reported all expenditures in the "other" category.

[6] https://www.eia.gov/tools/glossary/index.php?id=I

Earned Incentives, Other). Accounting costs that are known DSM program costs should not be reported under Indirect Utility Cost; those costs should be reported as Direct Utility Costs under the appropriate DSM program category.

- **Indirect cost:** Costs not directly related to mining or milling operations, such as overhead, insurance, security, office expenses, property taxes, and similar administrative expenses.

Vermont Annual and Three-Year Audits

In comparison, the Independent Auditor of the Vermont Energy Efficiency Utility Fund (annual audit)[7], commissioned by the PUC, uses a different definition. This audit considers the following cost categories as Administrative Costs.[8] Note that these include several cost categories not explicitly identified in REED's definition of administration costs. However, EVT's Operations Fee, PSD evaluation costs, and Fiscal Agent costs are not included.

- Applied R&D
- Education
- Evaluation
- General Administration
- Information Technology
- Planning and Reporting
- Policy and Public Affairs
- Performance Incentives

Additionally, 30 V.S.A. § 209(f) (12) requires the PUC to audit the cost-effectiveness of the reported energy and capacity savings programs delivered by the EEUs. This audit is completed on a cyclical three-year time frame and the most recent report is for the 2011-2013 period. This audit considers all costs that are not incentive costs to be administrative costs.

Vermont Electric EEUs (EVT and BED)

In 2014 and 2015, energy efficiency budgets for both of the Vermont electric EEUs were allocated into two main categories: Resource Acquisition (RA) costs, which are defined as costs for services that directly achieve energy savings and Non-Resource Acquisition (NRA) costs,[9] which are defined as services that provide necessary support for the operation of the EEUs, but do not directly achieve

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[7] 30 V.S.A 209 (d)(3)(A) requires the PUC provide the General Assembly with a report detailing the revenues collected and the expenditures made for energy efficiency programs.

[8] P 46. https://legislature.vermont.gov/assets/Legislative-Reports/LegReportRe2014EEUProgramRevenuesExpenditures.pdf

[9] "Non-Resource Acquisition" was the term used in 2014 in 2015. These costs are currently referred to as "Development and Support Services" (DSS).

energy savings. The categories of costs that fall under NRA budgets for the EEUs' 2014 and 2015 annual reports included:

- Education and Training
- Applied R&D
- Planning and Reporting
- Evaluation
- Policy and Public Affairs
- Information Technology
- General Administration
- Smart Grid and AMI (BED only)

These categories largely correspond to the categories used to define administrative costs for the annual audit by the Independent Auditor of the Vermont EEU fund. However, for the purposes of reporting to REED, the Vermont EEUs did not include any of the Non-Resource Acquisition costs described above and only reported administrative costs associated with resource acquisition. To allow for more comparable analysis across EEUs, EFG/Optimal added the NRA costs from EVT and BED's budgets to total spending amount these EEUs reported to REED. Based on the REED definition, we also estimated the portion of NRA costs that would be considered administrative and allocated them to the administrative costs EVT and BED reported to REED.

Burlington Electric

In their 2014 and 2015 energy efficiency annual reports, Burlington Electric's RA administrative costs fall into five main categories:

- **General** (Costs include general management, budgeting, financial management and legal costs directly associated with program implementation such as contract review.)
- **Implementation** (Implementation management and administrative costs include costs related to business development and customer service, data management, and other program administrative costs directly related to implementation.)
- **Planning** (Costs related to program design and planning, program screening and other similar functions.)
- **Marketing** (Costs related to marketing and outreach.)
- **IT Development** (IT development and maintenance costs.)

When reporting to REED in 2014 and 2015, BED included all of the RA costs above with the exclusion of marketing costs. The REED database tracks marketing costs as a separate cost category and BED reported its marketing costs in the separate REED category. BED did not report NRA costs in REED. NRA costs represent approximately 8% of BED's program budget. To allow for more comparable analysis across PAs, EFG/Optimal added the NRA costs from BED's budget to total spending amount BED reported to REED. We also estimated and added the portion of NRA costs that would be considered administrative (based on the REED definition) to the administrative costs previously reported to REED.

Efficiency Vermont

For Efficiency Vermont, RA Administration costs fall under their broader Operating Costs budget category. The Administration cost category includes the following costs:

- Staff time for EVT senior management, budgeting and financial oversight associated with resource acquisition.
- 1.8% operations fee (margin)
- Corporate indirect charges that were applied to Incentives to Participants
- Operation fee on indirect charges applied to incentives.

Aside from the 1.8% operations fee, EVT did not report NRA costs in REED. NRA costs represent approximately 9% of EVT's program budget. To allow for more comparable analysis across EEUs, EFG/Optimal added the NRA costs from EVT's budget that were not already reported to REED and added them to the total spending amount EVT reported to REED. A portion of the additional NRA costs were allocated to the administrative cost category (based on the REED definition).

Vermont Gas

In 2014 and 2015, Vermont Gas' energy efficiency program costs fell into four main categories:

- **Administrative** (All costs incurred related to the program including: management, tracking, reporting, marketing, program development and infrastructure, education and training, general administration, information technology, planning and reporting; except for those costs included in the audit, incentives, and evaluation cost categories.)
- **Audit** (Payments to utility staff or contractors for performing analyses, audits, inspections, and verifications. Also includes cost for energy ratings.)
- **Incentives** (Incentive payments to customers and/or trade allies, including direct installation costs if the utility pays)
- **Evaluation** (Evaluation costs, excluding tracking and reporting expenses)

Unlike the Vermont electric EEUs, Vermont Gas (which was not an EEU at the time) did not track Resource Acquisition and Non-Resource Acquisition costs separately in 2014 and 2015. While VGSs' NRA-type costs were included in both the 2014 and 2015 reporting (whether as administrative or not) to REED, because the VGS budgets were not structured like a Vermont EEU in 2014 both the administrative and all audit costs were reported to REED as administration costs. For example, for in-house auditors and engineers, the audit cost category included labor costs associated with performing energy efficiency audits as well as other labor costs such as maintaining Building Performance Institute (BPI) certification and benefits provided to employees by VGS. In 2015, in anticipation of becoming an EEU, VGS conducted an informal poll of employees to assess the portion of labor costs attributable to performing audits vs. other labor expenses, in order to break out reporting categories into RA and NRA to align with the requirements of becoming a Vermont EEU. VGS used results of the poll by program type to distribute the labor costs in the audit category accordingly between the administrative and audit cost categories. In 2015, only the administrative costs that were not directly associated with performing the audits were reported to REED as administration costs. The remaining costs in the audit cost category were reported as "other" costs in REED. For this reason, the administrative costs VGS reported to REED

were smaller in 2015 than 2014. Therefore VGS's 2015 reported administrative costs more closely conform to the REED definition of administrative costs and are likely more comparable to peers than 2014 data.

Administrative Efficiency Metrics

This analysis used four principal measurements of administrative efficiency using data as reported by efficiency program administrator (PA)s into REED. Additional benchmarking metrics, including those at the sector level, are presented in the full report. The four benchmarking metrics used in this analysis, and discussed more fully below, are:

- Administrative spending as a % of total spending
- Non-incentive spending as a % of total spending
- Ratio of non-incentive spending to incentive spending
- Annual cost of energy saved

Administrative Spending as a Percent of Total Spending

This first metric provides one means of assessing how much it costs a given PA to staff and implement their efficiency activities. Utilities with higher administrative cost percentages use a larger portion of their energy efficiency budgets for administrative costs relative to utilities with lower administrative spending percentages. As discussed, there are different ways to define administrative costs. For the purposes of this analysis, we started with the administrative costs as defined and reported in the NEEP REED database.

Non-Incentive Spending as a Percent of Total Spending

This second metric of spending efficiency encompasses a broader category of program costs; only excluding incentive payments to participants and, in the case of upstream programs, contractors, distributors, retailers, and manufacturers.

While high administrative or non-incentive program costs may be an indication of inefficient program operation, additional factors may contribute to the proportion of administrative or non-incentive program costs. These include, but are not limited to:

- **Program Administrator Size**. Economies of scale may be achieved when delivering efficiency programs. These economies may also be attained, or amplified, through statewide program implementation, including coordinated statewide electric and gas program delivery, as is in place in Massachusetts and Connecticut.
- **Program Maturity**. Well established programs may have lower administrative costs compared to a PA that is still ramping up their efficiency efforts. However, they may also have higher costs of savings as programs mature since inexpensive “low-hanging fruit” savings may represent a smaller proportion of their program activities.
- **Provision of Account Management and Technical Services**. For C&I customers, particularly larger ones, providing focused account management and technical services may allow a PA to attain significant savings from these customers at potentially lower incentive costs.

Ratio of Non-Incentive Spending to Incentive Spending

This third metric provides another way of understanding what portion of an organization's efficiency budget is spent on incentives vs. other costs. It is expressed as a ratio rather than a percentage. A ratio of less than one indicates that non-incentive spending was lower than incentive spending; a ratio of one indicates that non-incentive and incentive spending were equal; and a ratio greater than one indicates that non-incentive spending was greater than incentive spending. This metric is listed in Attachment C of a Vermont Public Utility Commission Order approving the Vermont EEUs' resource acquisition budgets as a proposed EEU MPR for the 2018-2020 performance period.[10] On a forward going basis an important consideration for developing such a metric is to be explicit in defining what PA costs are categorized as incentive and non-incentive costs. As noted above, the treatment of direct install labor costs is one example of where PAs may not treat costs consistently.

Cost of Savings

This fourth metric, expressed in dollars per kWh or dollars per therm, allows for comparison of how much efficiency costs in total across different program administrators and programs. This metric can be presented using either annual or lifetime savings in the denominator. Low costs of saved energy (also referred to as *cost of savings*) typically indicate that a PA is using its program resources efficiently and achieving savings at a good value for ratepayers. Therefore, an organization with a high percent of administrative spending, but low costs of savings may warrant less scrutiny than a PA with both high administrative spending percentages and high costs of savings.

As with other metrics of program efficiency, costs of saved energy may vary for reasons unrelated to efficient program delivery. These may include:

- **Support of delivered fuel efficiency activities**. Many PAs in the Northeast use electric efficiency funds to support delivered fuel efficiency efforts, particularly in their low income and residential sector programs. These activities will raise the electric cost of savings as program budget is expended for activities that do not yield electricity savings.
- **Annual vs. Lifetime savings**. Annual cost of savings metrics can be skewed by measures with short measure lives, most notably by residential behavior efforts. For example, in 2017, residential gas behavior savings constituted 39% of Massachusetts statewide residential sector annual gas savings and 21% of statewide portfolio annual gas savings, but only 3% of statewide residential and 2% of statewide portfolio lifetime savings.
- **Low income program activity.** The extent of low income program funding may have an impact on cost of savings. Incentives for low income programs are typically at or near full measure cost. As a result, low income programs have a high cost of saved energy compared to other programs in a PA's portfolio. Higher proportional amounts of low income program activity will tend to raise the cost of savings at the portfolio level.

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[10] Vermont Public Utility Commission Case No. EEU-2016-03, Order In Re: 2016-2017 Demand Resources Plan Proceeding. Attachment C, Table C-4.

- **Residential vs. C&I program spending**. Residential programs usually have higher costs of savings given higher per participant transaction costs and lower hours of use compared to commercial programs and measures. PAs providing greater proportions of efficiency services to the residential sector will tend to have higher overall portfolio-level costs of saved energy. While this report does not examine sector or program (major market) level costs of saved energy, there is often value in doing so for the reasons noted. This project's Final Report will provide sector-level results for the four benchmarking metrics presented in this report.
- **Depth of Savings.** While not examined explicitly, deeper savings may require higher incentives (as a percent of incremental cost) to induce greater participation and measure uptake.
- **Presence of residential behavioral programs**. Residential behavioral programs typically have low annual (but high lifetime) costs of savings. For some PAs, noted in the Massachusetts example above, these programs represent a significant portion of their residential sector savings, potentially lowering portfolio-level costs of saved energy.
- **Differences in how energy savings are determined**. Program administrators in different jurisdictions may claim different savings for the same measure. Some of these differences may reflect actual variations in measure savings due to differences in parameters like hours of use or heating and cooling degree days. However, some of the differences may be driven by the level of evaluation activity and how recent a given measure has been evaluated. In some states this issue is further complicated by regulatory requirements. One example is in Massachusetts, where net to gross (NTG) ratios are locked in place throughout a given Three-year Plan cycle. For example, in 2015 it was agreed that the NTG ratio for a standard residential LED lamp sold at retail in Massachusetts would be 70% in 2018. Connecticut, which updates its NTG assumptions annually and which completed a residential lighting NTG study in 2017, uses a 44% NTG value for a standard residential LED lamp sold at retail in 2018. Given the large contribution of residential lighting to most PA portfolios throughout the Northeast and Mid-Atlantic regions, such differences in a single variable would have a measurable impact on a cost of saved energy metric.

Summaries of all of these metrics for each of the Vermont organizations in 2014 and 2015 is provided in Table 1 above.

Benchmarking Results

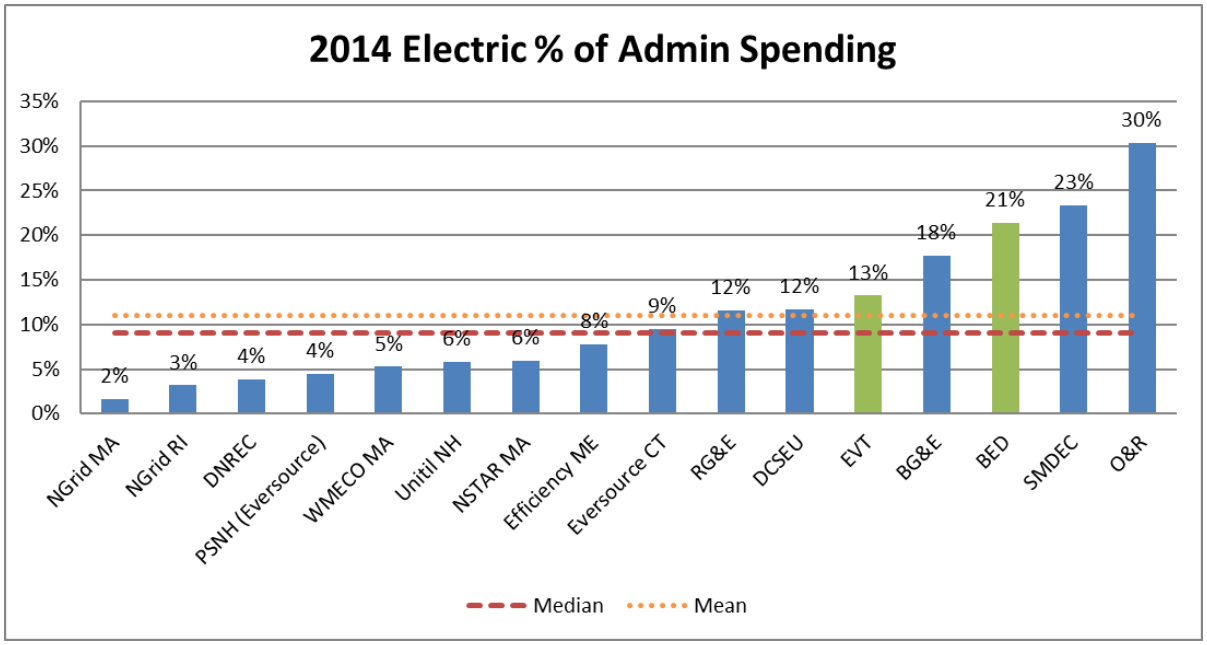
Administrative Spending as a Percent of Total Spending and Cost of Savings

The sections below present 2014 and 2015 administrative spending comparison findings for the two Vermont electric EEUs, Vermont Gas, and selected Northeast and Mid-Atlantic electric and gas PAs. Table 1 summarizes administrative spending as a percent of total spending for each of the Vermont organizations in 2014 and 2015. When comparing EVT and BED in the following section is it worth remembering that EVT had a narrower definition of administrative costs than BED.

Electric

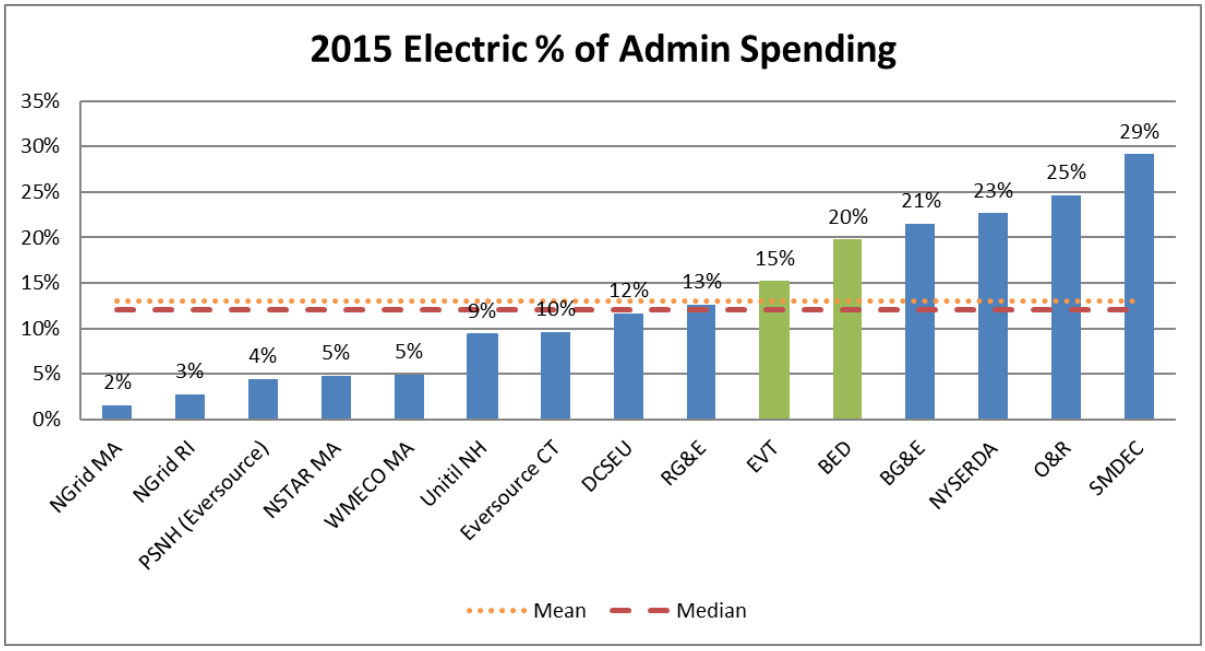
For the PAs reviewed, Figure 1 below illustrates the percentage of each organization's electric energy efficiency budget that was spent on administrative costs in 2014. The range of administrative cost percent spending in 2014 varied widely from 2% to 30%. The average value was 11% and the median value was 9%. Efficiency Vermont's administrative spending as a percent of total program budget was above the average and the median at 13%. Burlington Electric's administrative spending as a percent of total program budget was also above both the average and the median at 21%.

Figure 1: 2014 Electric % of Administrative Spending



In 2015, electric efficiency program administrative spending results were similar to 2014, though slightly higher on average than in 2015. The range of administrative cost percentage spending in 2015 ranged from 2% to 29%. The average value was 13% and the median value was 12%. In 2015, Efficiency Vermont's electric program administrative spending was above both the average and the median. As a percent, EVT's administrative spending increased slightly from 13% in 2014 to 15% in 2015. Burlington Electric was above both the group average and the median. As a percent, BED's administrative spending decreased slightly from 21% in 2014 to 20% in 2015.

Figure 2: 2015 Electric % of Administrative Spending



In addition to comparing administrative spending as a percent of total energy efficiency program spending, it is useful to compare percent of administrative spending relative to the cost per unit of energy saved. This *cost of saved energy* metric allows for comparison of how much efficiency costs in total across different program administrators and programs. Low costs of saved energy (also referred to as *cost of savings*) typically indicate that a PA is using its program resources efficiently and achieving savings at a good value for ratepayers. Therefore, an organization with a high percent of administrative spending, but low costs of savings may warrant less scrutiny than a PA with both high administrative spending percentages and high costs of savings.

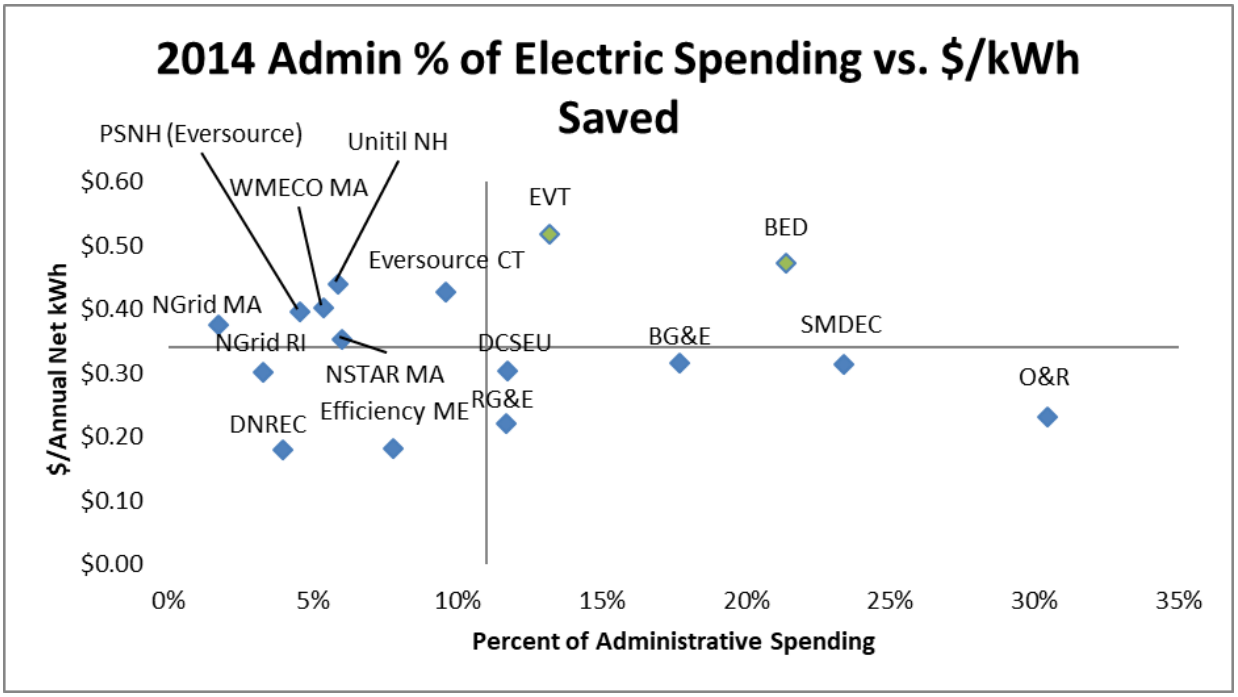
Note also, that the cost data used in these calculations do not include participant costs. Therefore, the cost of savings values that are presented are from a program administrator perspective, rather than from a total resource or societal perspective. While, participant costs could be included in the calculation of the cost of savings metrics, PAs tend to track participant costs less carefully than their

own, internal costs. This challenge may be further compounded as more incentives are moved upstream to distributors, retailers, and manufacturers.

For the PAs reviewed, the scatter plot below (Figure 3) illustrates where each one falls relative to average percent of spending for administrative costs and average first year cost per kilowatt hour (kWh) saved. Percent of administrative spending is on the horizontal axis; first year cost of energy savings is on the vertical axis; and the axes are set at the average (mean) values. For example, the PAs in the bottom right quadrant are those that had a higher than average percent of administrative spending at costs of savings that were below the group average. Table 1 summarizes administrative spending as a percent of total spending and cost of savings for each of the Vermont organizations in 2014 and 2015.

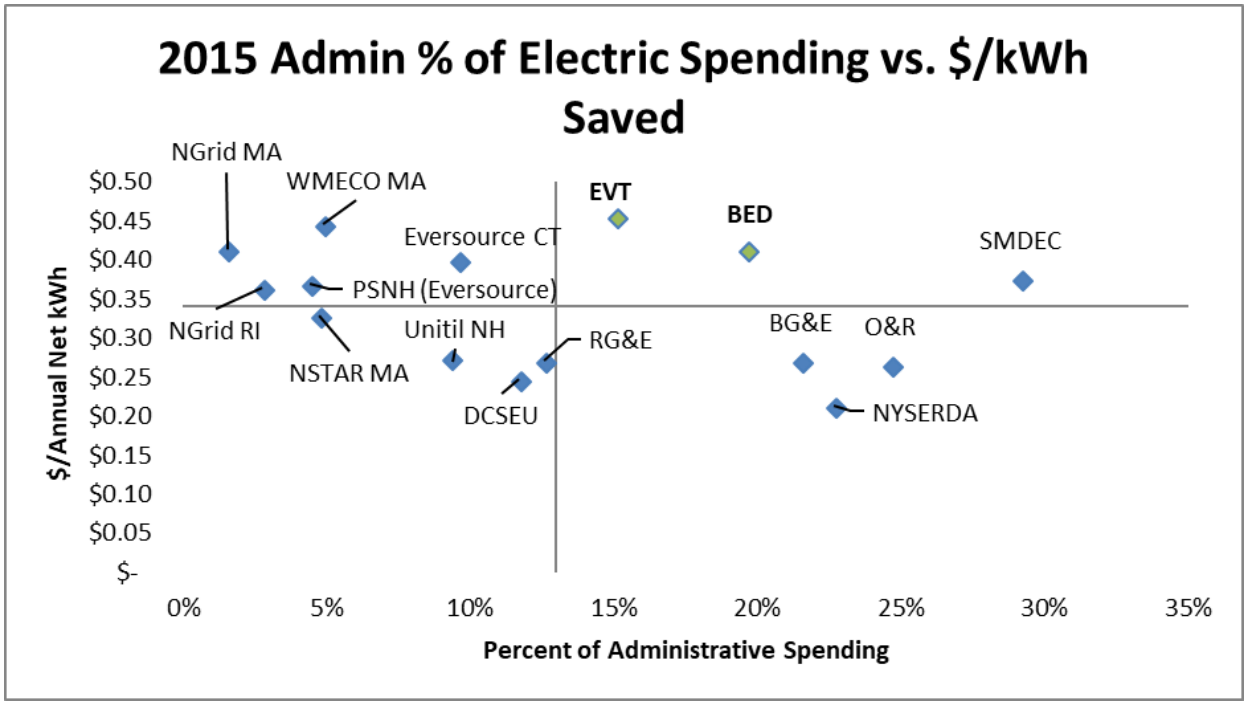
In 2014, the first-year electric costs of savings for the comparison group ranged from $0.18/kWh to $0.52/kWh. The average cost of savings was $0.34/kWh and the median was also $0.34/kWh. Both Efficiency Vermont and Burlington Electric had higher than average and median costs of savings. Efficiency Vermont had the highest cost of savings of any of the comparison organizations at $0.52/kWh. Burlington Electric had the second highest cost of savings at $0.47/kWh.

Figure 3: 2014 Administrative % of Electric Spending vs. $/kWh Saved



In 2015 (Figure 4), electric costs of savings were similar, on average, to those in 2014. First year electric costs of savings ranged from $0.21/kWh to $0.45/kWh. The average cost of savings was $0.34/kWh and the median was $0.36/kWh. Efficiency Vermont and Burlington Electric both had higher than average and median costs of savings in 2015. Efficiency Vermont had the highest cost of savings in 2015 of any of the comparison organizations at $0.45/ kWh (NSTAR in Massachusetts also shared this cost of savings). This value was lower than EVT's $0.52/kWh in 2014. Burlington Electric's cost of saving in 2015 was tied for second highest at $0.41/kWh, which was lower than its cost of savings in 2014 at $0.47/kWh.

Figure 4: 2015 Administrative % of Electric Spending vs. $/kWh Saved



Gas

Figure 5 below illustrates the percentage of each organization's gas energy efficiency budget that was spent on administrative costs in 2014. The range of administrative cost percent spending varied from 2% to 36%. The average value was 13% and the median value was 9%. Vermont Gas's administrative spending was well above the average and median values at 36%. It should be noted that, in 2014, VGS was unable to extract administrative costs directly associated with program activity and other administrative costs, so all non-incentive costs were reported to REED in the administration costs category (in other words, VGS reported the sum of its administrative and audit cost categories as administration costs in REED.) In addition, since VGS had not yet been designated an official EEU in years 2014 and 2015, VGS program data was not verified in the same way as EVT and BED.

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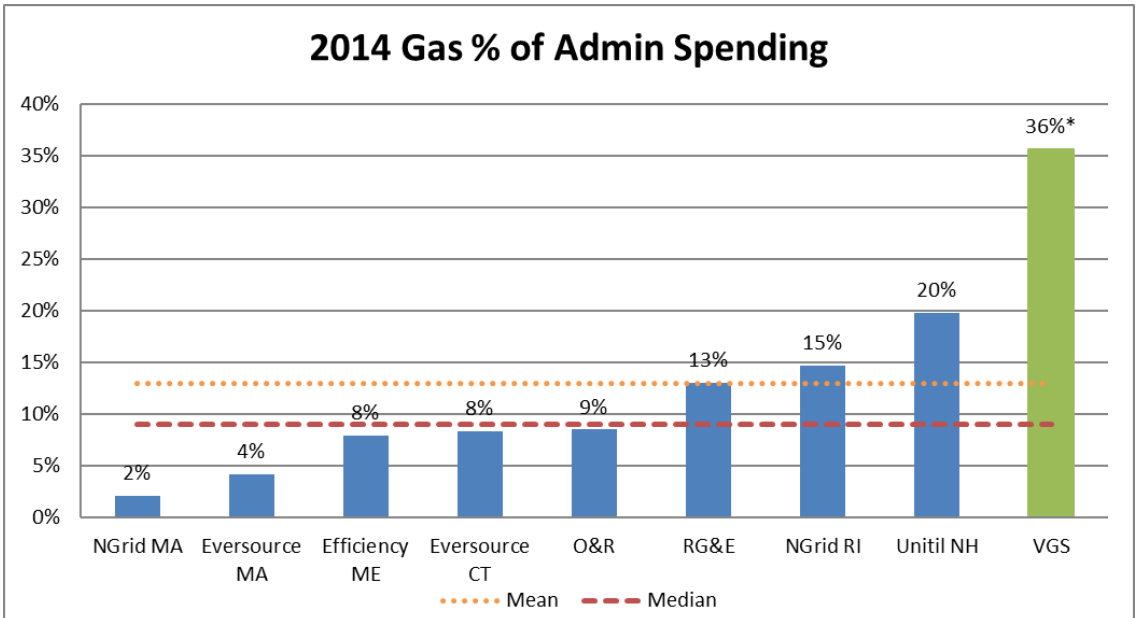
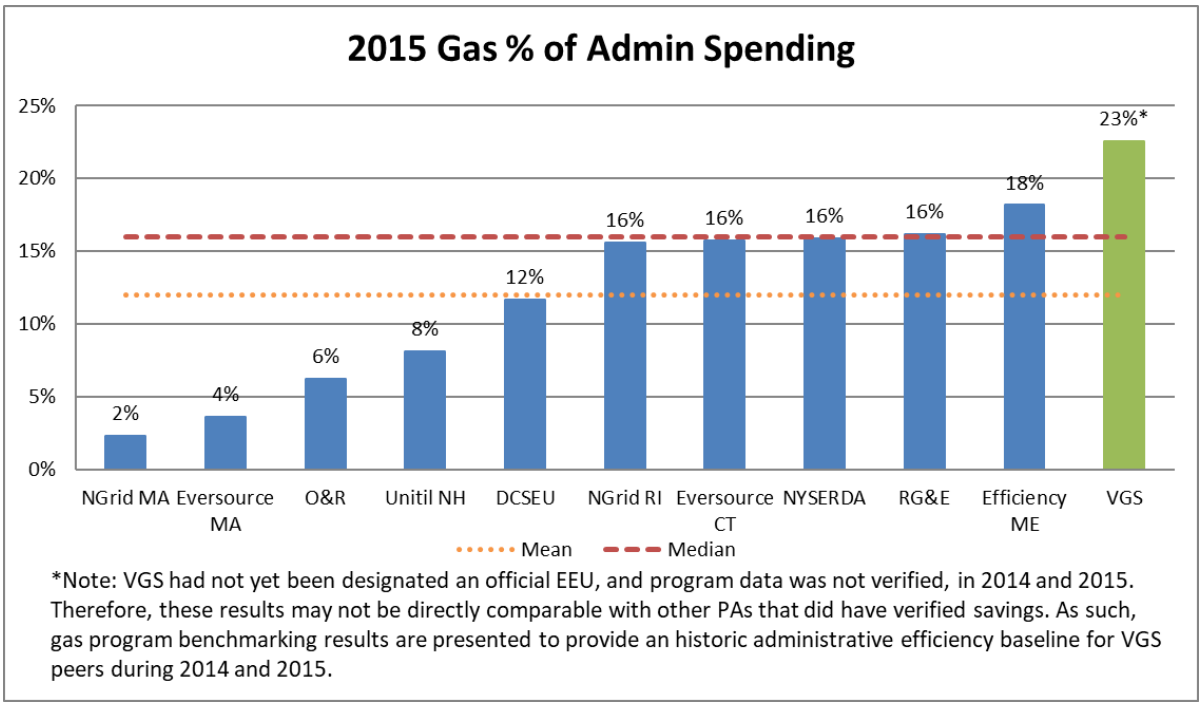
Figure 5: 2014 Gas % of Administrative Spending



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015. VGS administrative costs reported to REED included all audit costs and other non-incentive costs in 2014.

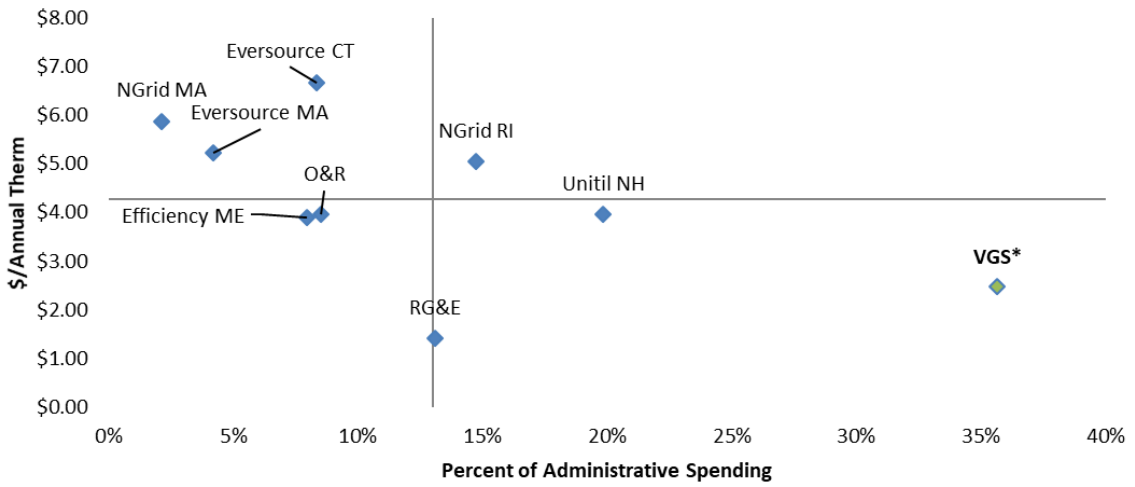
In 2015 (Figure 6), gas efficiency program administrative spending results were similar to 2014, on average, though the median value was higher. The range of administrative cost percent spending in 2015 ranged from 2% to 23%. The average value was 12% and the median value was 16%. In 2015, Vermont Gas continued to have the highest percent of administrative spending at 23%, although this value was considerably lower than the 36% percent administrative spending in 2014. This drop was largely due to a change in the way VGS tracked and reported administrative costs to REED. As noted above, in 2014 all of VGS' administrative and audit costs were reported to REED in the administration costs category. In 2015, VGS reported administration costs to REED as the sum of its administrative costs and an extracted portion of audit costs that were attributable to purposes other than performing audits (i.e. BPI certification and employee benefits). As previously mentioned, VGS program data was not verified in the same way as EVT and BED since VGS had not yet been designated an official EEU in years 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings, in the same way that BED and EVT's results are comparable with their peers. As such, in the current study, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Figure 6: 2015 Gas % of Administrative Spending



In 2014 (Figure 7), the first-year gas costs of savings ranged from $1.41/therm to $6.67/therm. The average cost of savings was $4.28/therm and the median was $3.96/therm. Vermont Gas had below average costs of savings compared to other organizations. At $2.46/therm, VGS's costs of savings were the second lowest of all comparison PAs. However, because VGS was not a designated EEU in 2014 and savings was not verified by a third party, cost of savings values may not be directly comparable to other program administrators.

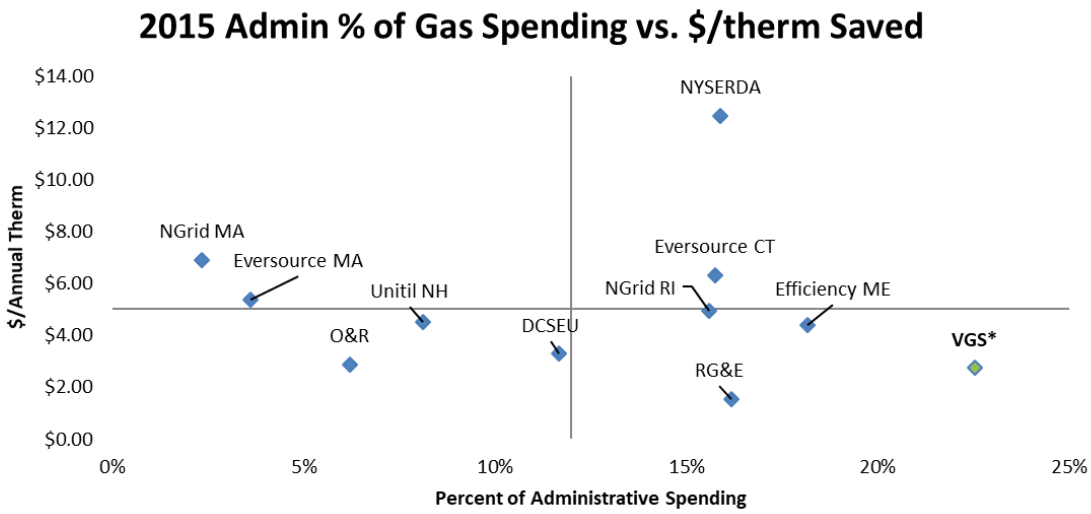
Figure 7: 2014 Administrative % of Gas Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015 (Figure 8), the range of gas cost of savings was similar to 2014 at $1.55/therm to $12.46/therm. The average and median values were somewhat higher at $5.03 and $4.50, respectively. In 2015, Vermont Gas again had the second lowest cost of savings of any of the comparison organizations at $2.72/therm. This was higher than VGS' cost of savings in 2014 at $2.46/therm. Even though an above average percent of Vermont Gas's efficiency budget was spent on administrative costs compared to their peers, the overall spending to achieve savings was comparatively low. Therefore, Vermont Gas's higher administrative costs may not be an indicator that the organization was administratively inefficient. However, VGS was not an official EEU in 2015 and these results may not be directly comparable with other PAs that did have verified program results.

Figure 8: 2015 Administrative % of Gas Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

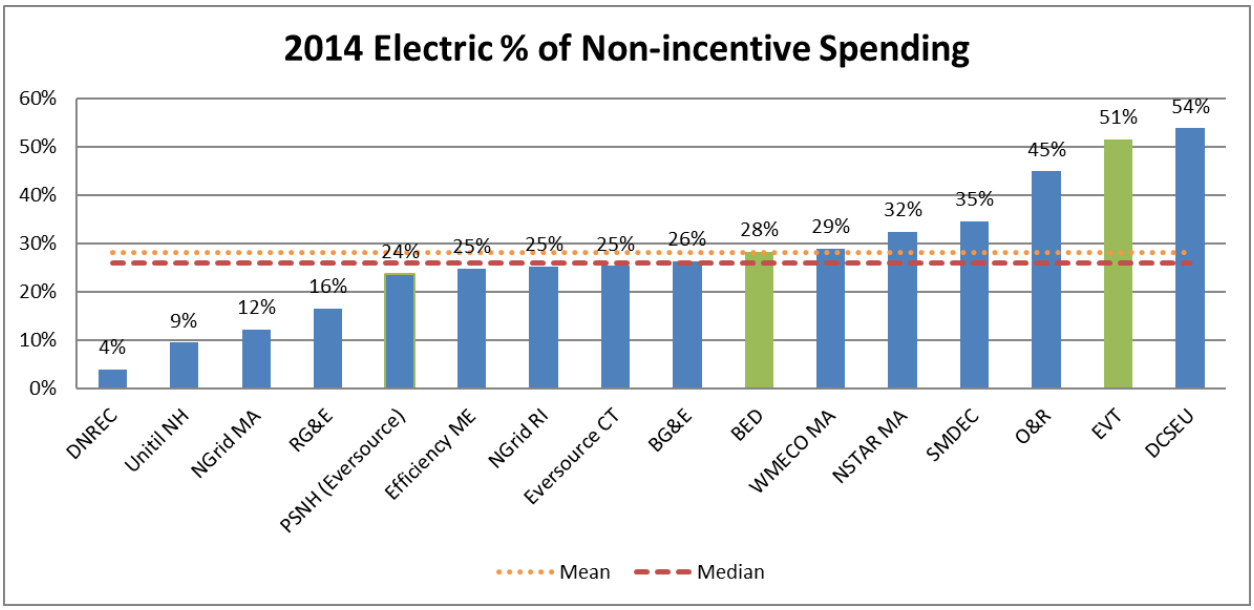
Non-Incentive Spending as a Percent of Total Spending

As noted above, there may be legitimate reasons why administrative cost percentages vary across energy efficiency program administrators. Therefore, using alternative program administration metrics can be useful. Provided below is a comparison of non-incentive spending as a percent of total spending. While potentially less granular than administrative cost comparisons, it provides an alternative, and potentially simpler and more intuitive, means to examine direct program spending relative to other costs. Table 1 summarizes non-incentive spending as a percent of total spending for each of the Vermont organizations in 2014 and 2015. The data in these analyses include PA incentive and non-incentive costs as reported into REED by the Vermont EEUs. For EVT non-incentive costs include the operations fee and performance award.

Electric

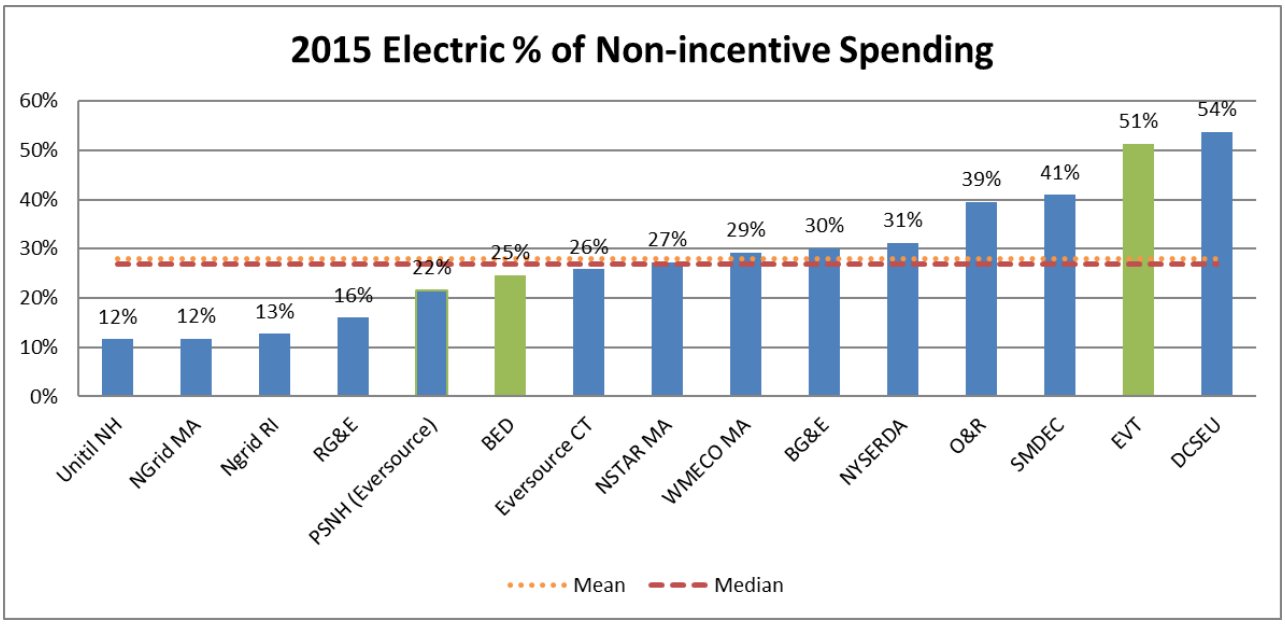
For the organizations reviewed, Figure 9 below illustrates the percentage of each organization's REED-reported electric energy efficiency budget that was spent on costs other than incentive costs in 2014. For the VT EEUs the budget amounts have been adjusted as discussed below to include components of their NRA costs not reported to REED. The range of non-incentive percent spending in 2014 was 4% to 54%. The average value was 28% and the median value was 26%. Efficiency Vermont's non-incentive spending was significantly above the average and median at 51%, while Burlington Electric was the same as the average and above the median at 28%.

Figure 9: 2014 Electric % of Non-Incentive Spending



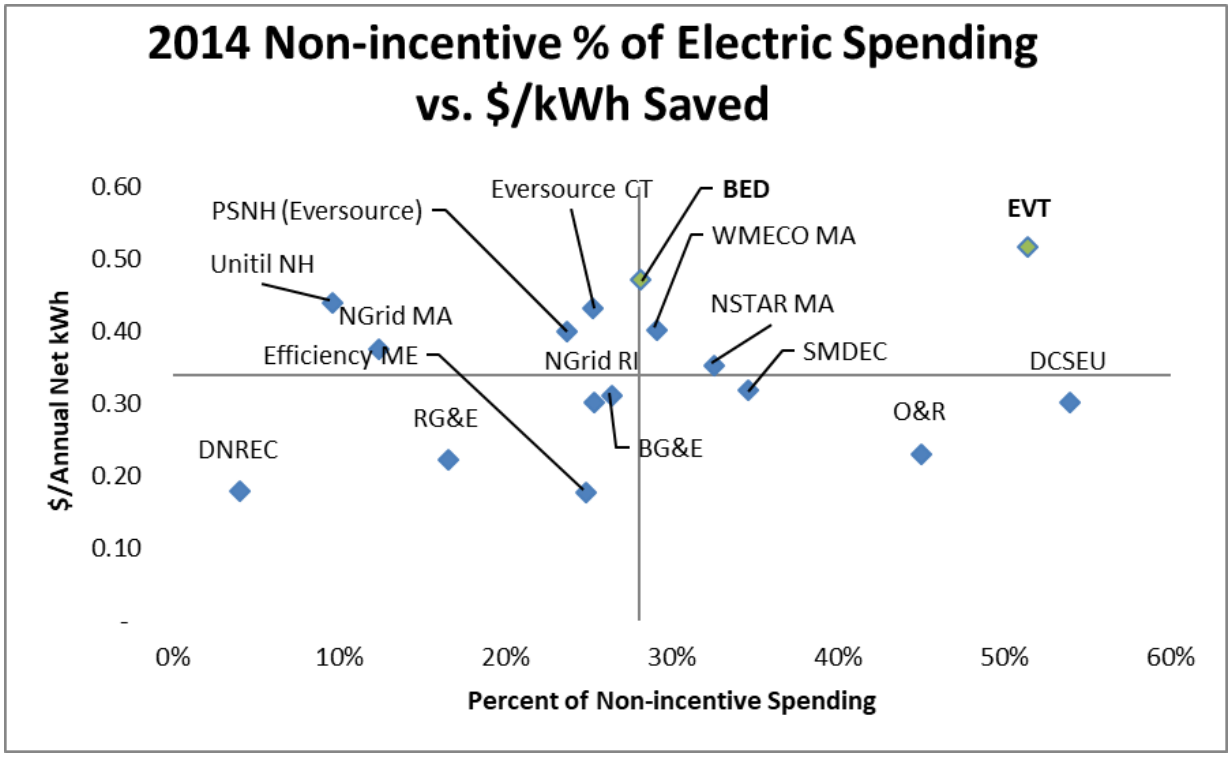
In 2015 (Figure 10), the range of non-incentive percent spending was 4% to 54%. The average value was 28% and the median value was 27%. Efficiency Vermont's non-incentive spending was substantially above the average and median at 51%, while Burlington Electric was below the average and the median at 25%. EVT's percent of non-incentive spending stayed constant relative to 2014 and BED's non-incentive spending decreased from 28% to 25% from 2014 to 2015.

Figure 10: 2015 Electric % of Non-Incentive Spending



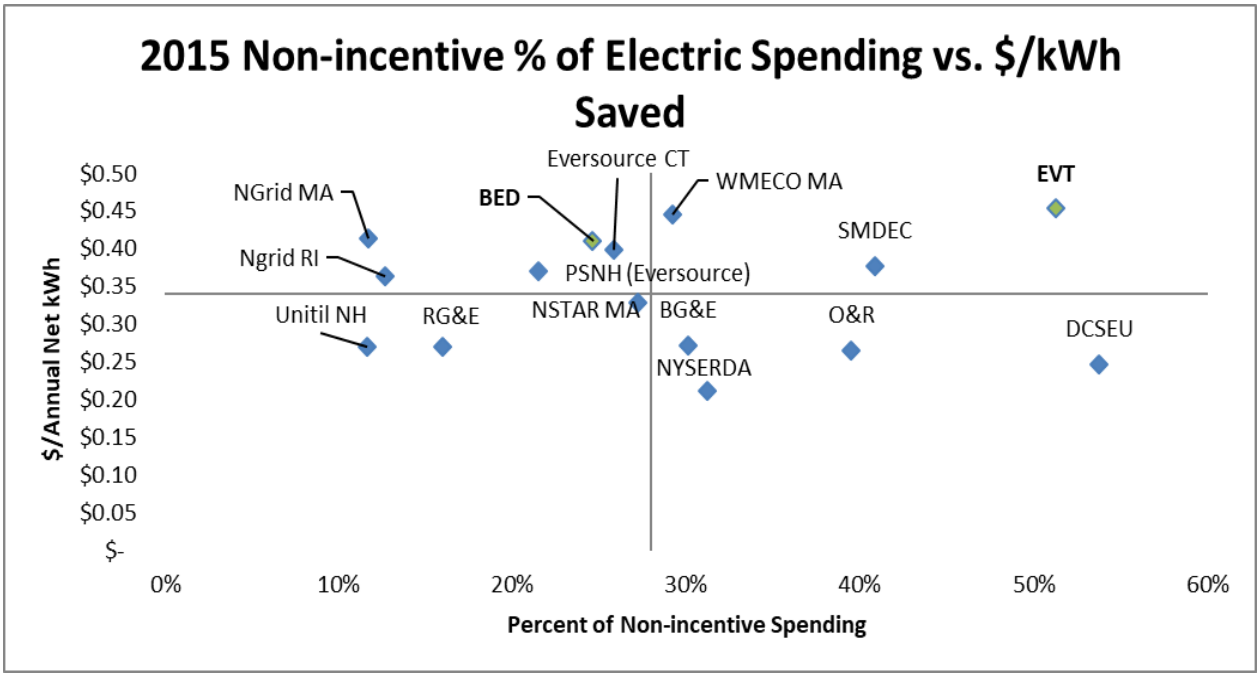
When comparing 2014 non-incentive spending to the cost of savings ($/annual kWh), Burlington Electric had average non-incentive spending at 28%, but an above average cost of saved energy at $0.47/kWh (Figure 11). Efficiency Vermont had both above average non-incentive spending at 51% and an above average cost of saved energy at $0.52/kWh. Table 1 summarizes non-incentive spending as a percent of total spending and cost of savings for each of the Vermont organizations in 2014 and 2015.

Figure 11: 2014 Non-Incentive % of Electric Spending vs. $/kWh Saved



When comparing 2015 non-incentive spending to the cost of savings (Figure 12), the results look similar to 2014. Burlington Electric had below average non-incentive spending at 25%, but an above average cost of savings at $0.41/kWh. BED's non-incentive spending decreased from 28% in 2014 and its cost of savings decreased from $0.47/kWh. Efficiency Vermont had both above average non-incentive spending at 51% and an above average cost of savings at $0.45/kWh. Although EVT's non-incentive spending remained constant from 2014 to 2015, its cost of savings decreased from $0.52/kWh in 2014.

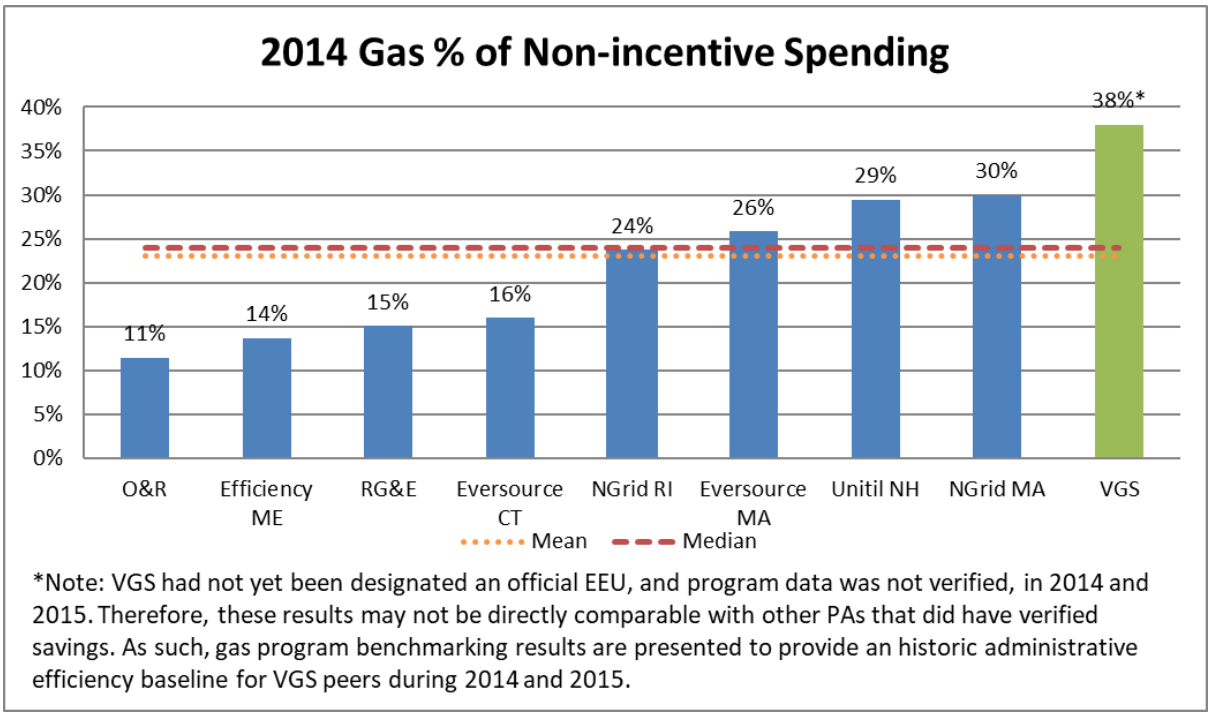
Figure 12: 2015 Non-Incentive % of Electric Spending vs. $/kWh Saved



Gas

For the gas program administrators, non-incentive percent spending in 2014 ranged from 11% to 38% (Figure 13). The average value was 23% and the median value was 24%. Vermont Gas non-incentive spending was above both the average and the median values and was the highest non-incentive spending of any of the comparison organizations at 38%.

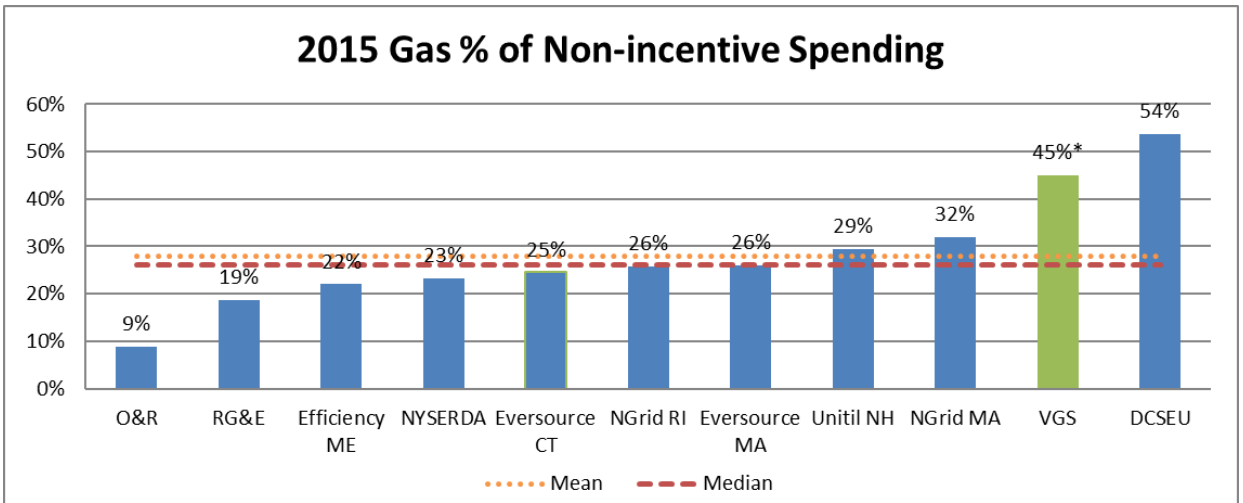
Figure 13: 2014 Gas % of Non-Incentive Spending



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015 (Figure 14), the range of non-incentive percent spending was 9% to 54%. The average value was 28% and the median value was 26%. Vermont Gas non-incentive spending was above both the average and the median values and was the second highest non-incentive spending of any of the comparison organizations at 45%. This was higher than VGS non-incentive spending in 2014 at 38%.

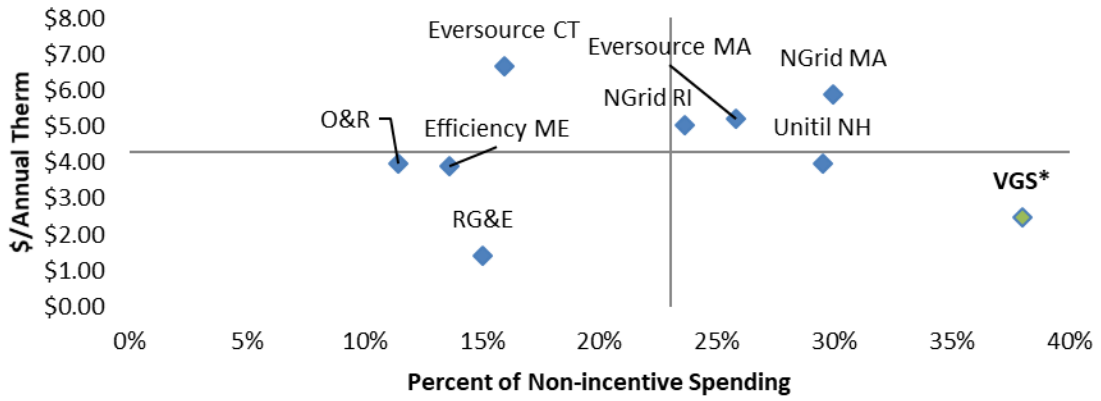
Figure 14: 2015 Gas % of Non-Incentive Spending



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2014 (Figure 15), Vermont Gas had above average non-incentive spending at 38%, but a below average cost of savings at $2.46/therm. Although a larger portion of the Vermont Gas budget was spent on costs other than program incentives than comparable program administrators, their cost of savings was lower than most of the other PAs in the comparison group.

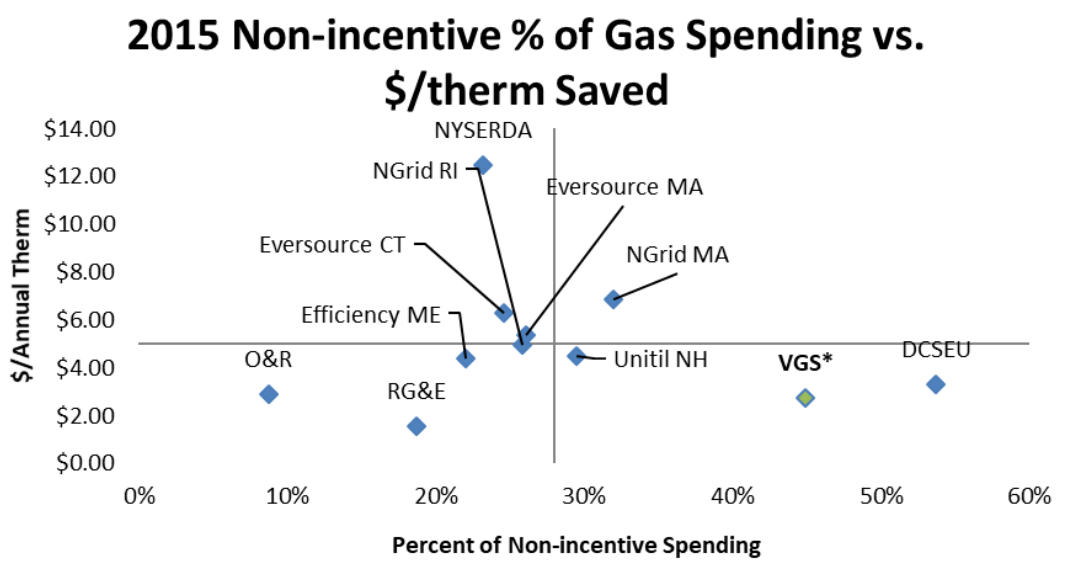
Figure 15: 2014 Non-Incentive % of Gas Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Results were similar in 2015 with Vermont Gas having above average non-incentive spending, but a below average cost of savings (Figure 16). In 2015, VGS non-incentive spending was 45% compared to 38% in 2014. In 2015, VGS' cost of savings was $2.27/therm compared to $2.46/therm in 2014.

Figure 16: 2015 Non-Incentive % of Gas Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

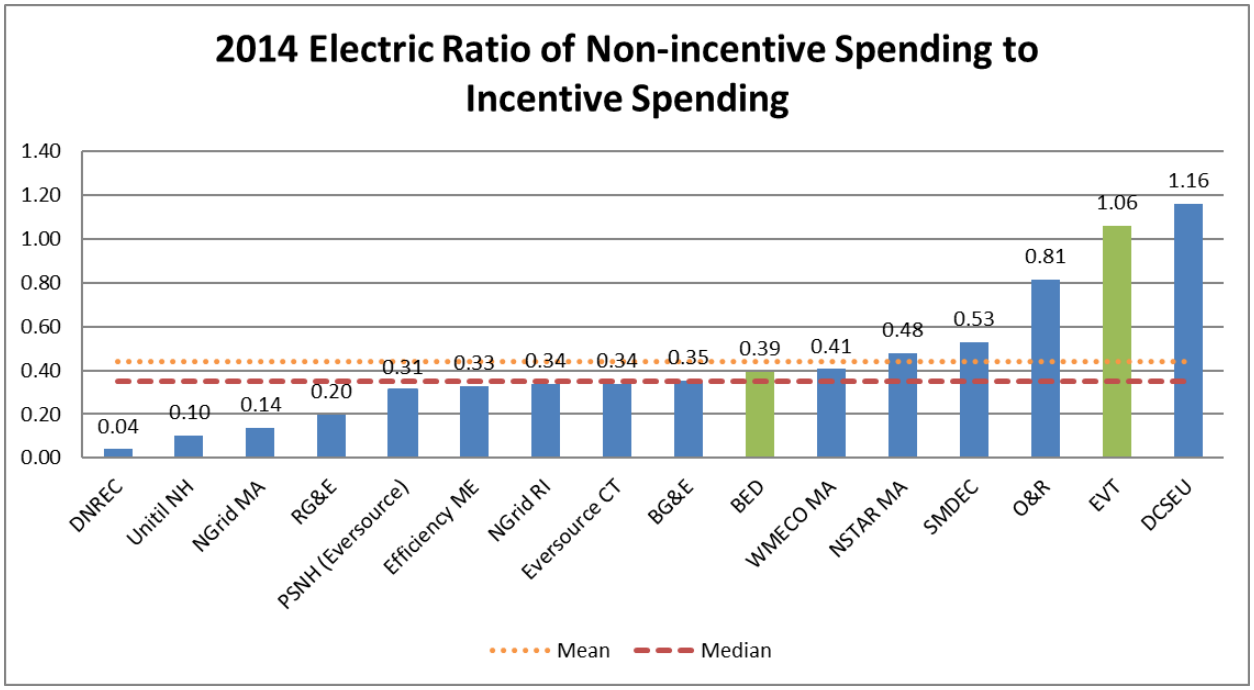
Ratio of Non-Incentive Spending to Incentive Spending

Another way to look at non-incentive spending compared to other spending is to use the ratio of non-incentive spending to incentive spending. Using this metric, a ratio of less than one indicates that non-incentive spending was lower than incentive spending; a ratio of one indicates that non-incentive and incentive spending were equal; and a ratio greater than one indicates that non-incentive spending was greater than incentive spending. Table 1 summarizes the ratio of non-incentive spending to incentive spending for each of the Vermont organizations in 2014 and 2015.

Electric

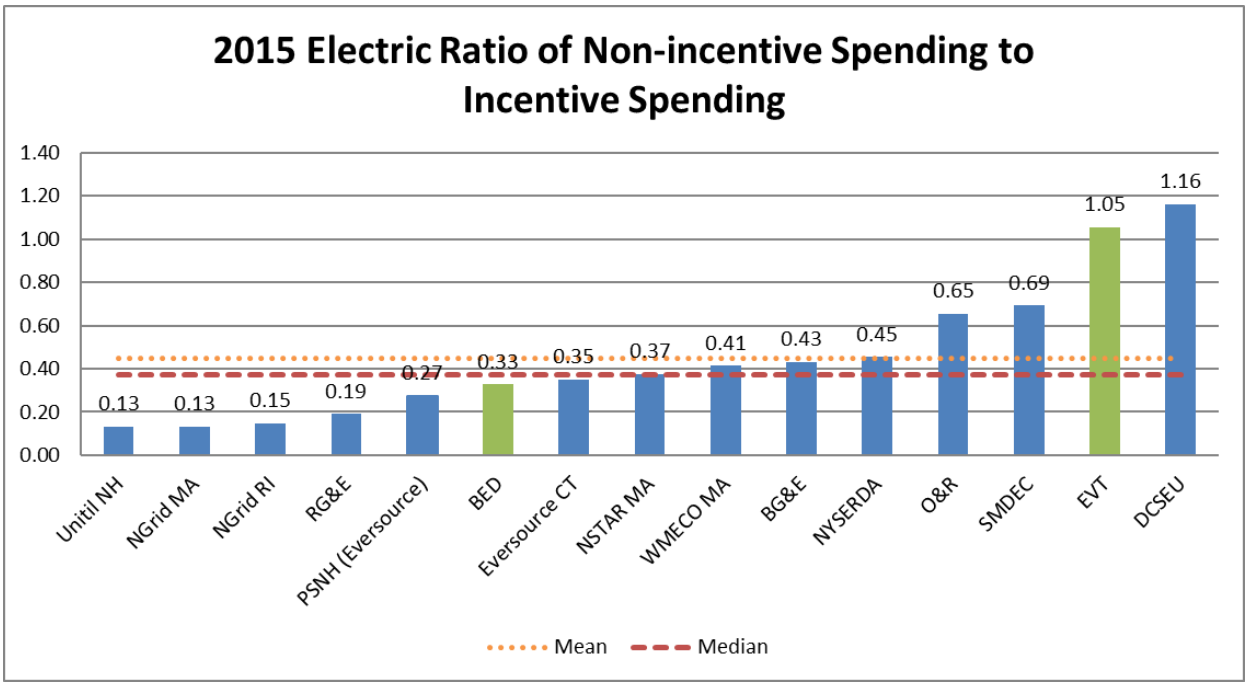
In 2014 (Figure 17), electric non-incentive to incentive spending ratios ranged from 0.04 to 1.16. The average was 0.44 and the median was 0.35. The ratio for Burlington Electric was above the average and the median at 0.39 while the ratio for Efficiency Vermont was above the average and the median at 1.06.

Figure 17: 2014 Electric Ratio of Non-Incentive Spending to Incentive Spending



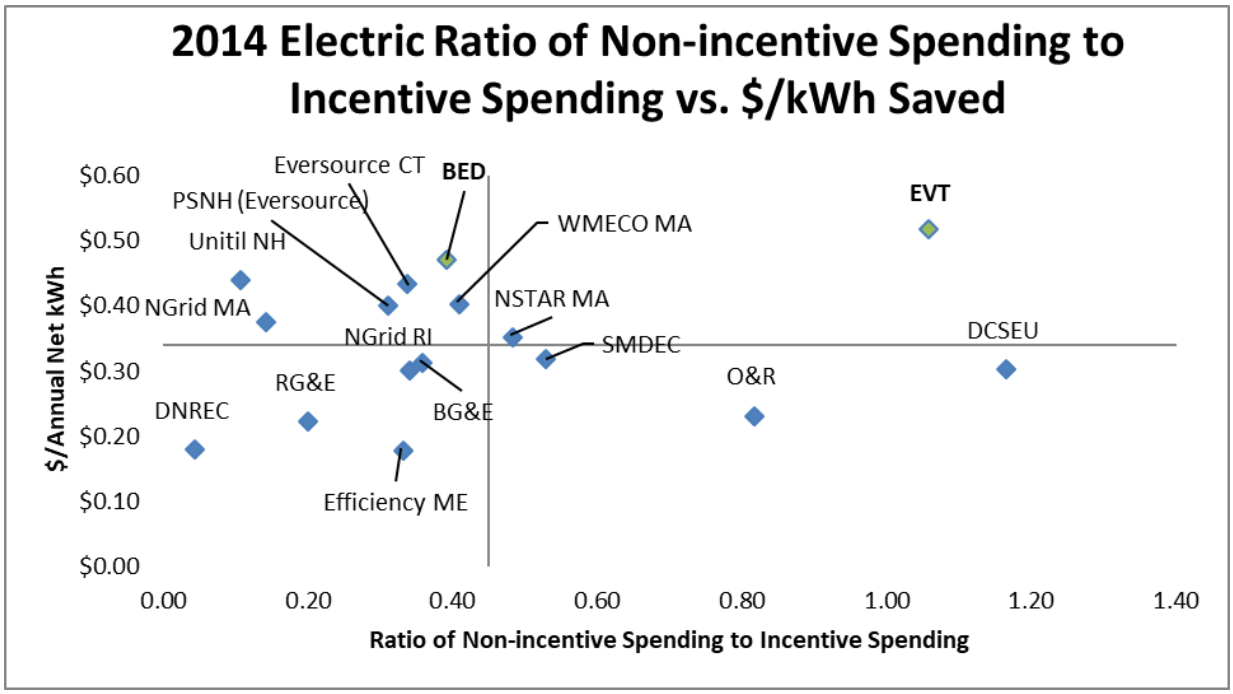
In 2015 (Figure 18), electric non-incentive to incentive spending ratios ranged from 0.13 to 1.16. The average and median were slightly higher than 2014 at 0.45 and 0.37 respectively. The ratio for Burlington Electric was above the average and below the median at 0.33, which was lower than the ratio of 0.39 in 2014. Efficiency Vermont was above the average and the median at 1.05, though slightly lower than the ratio of 1.06 in 2015.

Figure 18: 2015 Electric Ratio Non-Incentive Spending to Incentive Spending



In 2014 (Figure 19), Burlington Electric had a below average non-incentive to incentive spending ratio of 0.39, but an above average cost of savings of $0.47/kWh. Efficiency Vermont had both an above average non-incentive to incentive spending ratio of 1.06 and an above average cost of savings of $0.52. Table 1 summarizes non-incentive to incentive spending ratios and cost of savings for each of the Vermont organizations in 2014 and 2015.

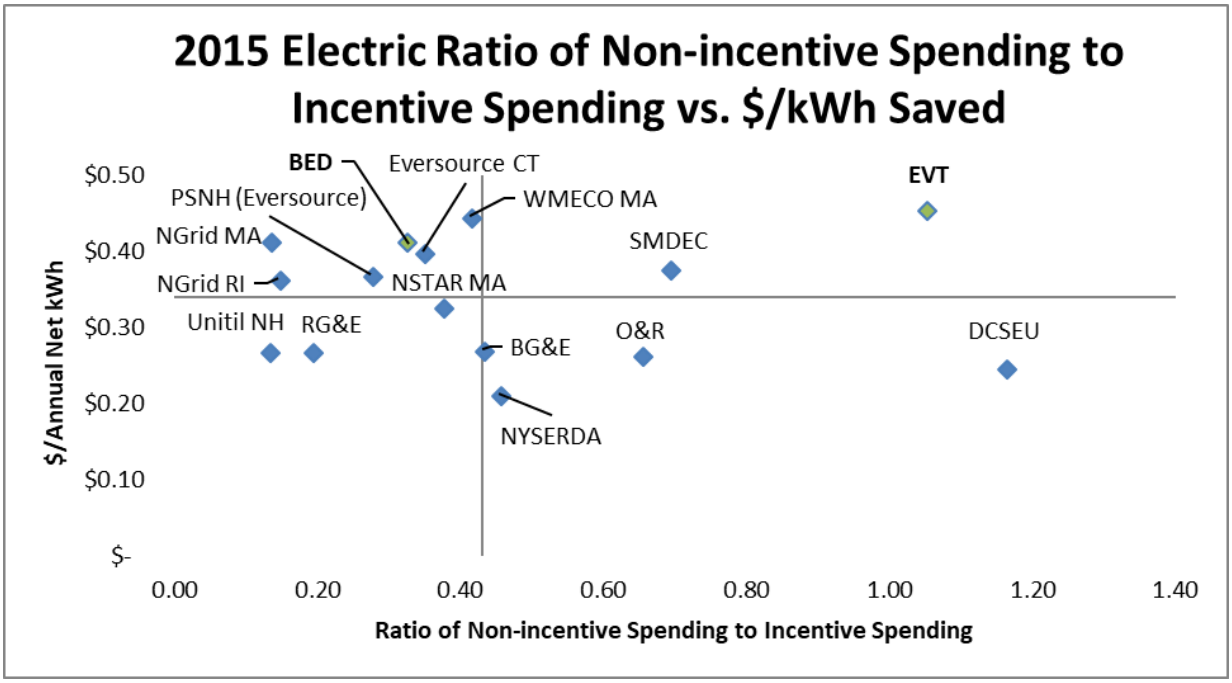
Figure 19: 2014 Electric Ratio of Non-Incentive Spending to Incentive Spending vs. $/kWh Saved



In 2015 (Figure 20), Burlington Electric had a below average non-incentive to incentive spending ratio of 0.33, which was lower than the ratio of 0.39 in 2014. BED had an above average cost of savings of $0.41/kWh, which was lower than the cost of savings in 2015 at $0.47/kWh.

Efficiency Vermont had an above average non-incentive to incentive spending ratio of 1.05, which was slightly lower than the ratio of 1.06 in 2015. EVT also had an above average cost of savings of $0.45/kWh, which was lower than 2014 at $0.52/kWh.

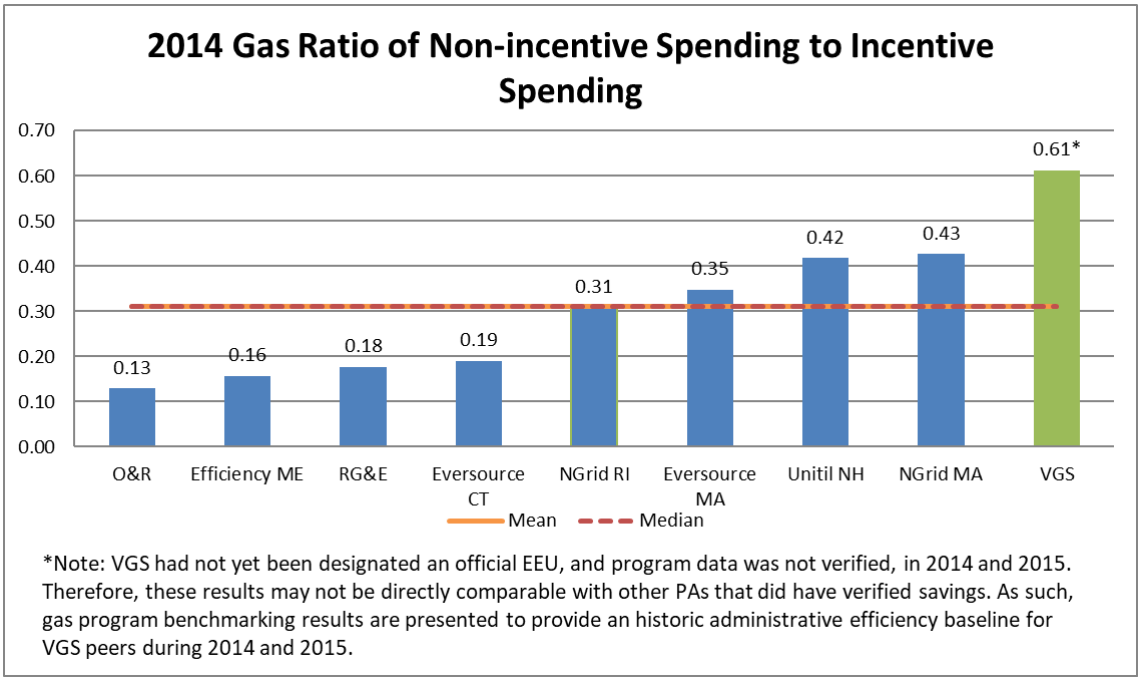
Figure 20: 2015 Electric Ratio of Non-Incentive Spending to Incentive Spending vs. $/kWh Saved



Gas

In 2014 (Figure 21), gas non-incentive to incentive spending ratios ranged from 0.13 to 0.61. The average and the median were both 0.31. The ratio for Vermont gas was the highest of any of the gas comparison group at 0.61.

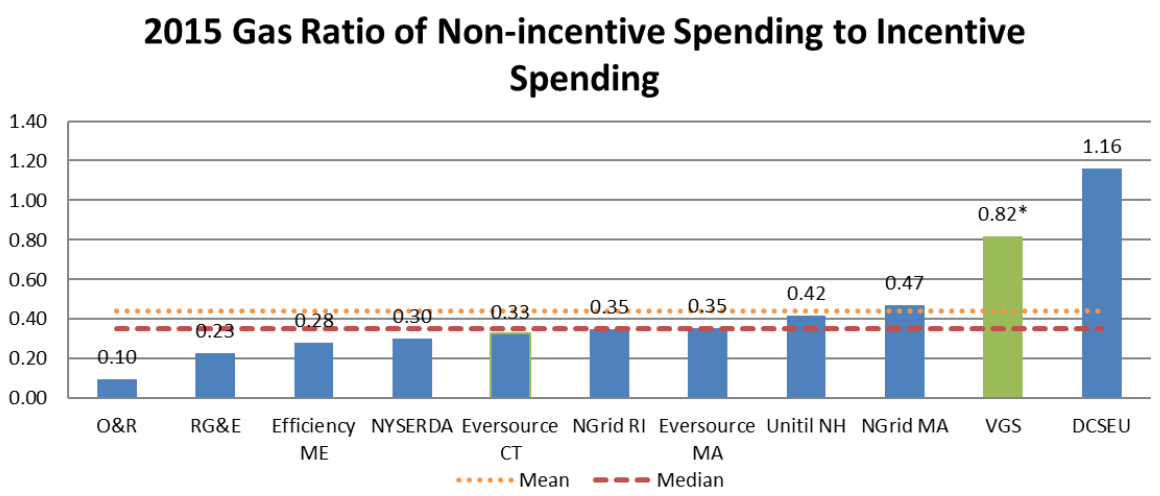
Figure 21: 2014 Gas Ratio of Non-Incentive Spending to Incentive Spending



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2015 (Figure 22), gas non-incentive to incentive spending ratios ranged from 0.10 to 1.16. The average was 0.44 and the median was 0.35. The ratio for Vermont gas was the second highest of the gas comparison group at 0.82. This was higher than the VGS ratio in 2014 of 0.61.

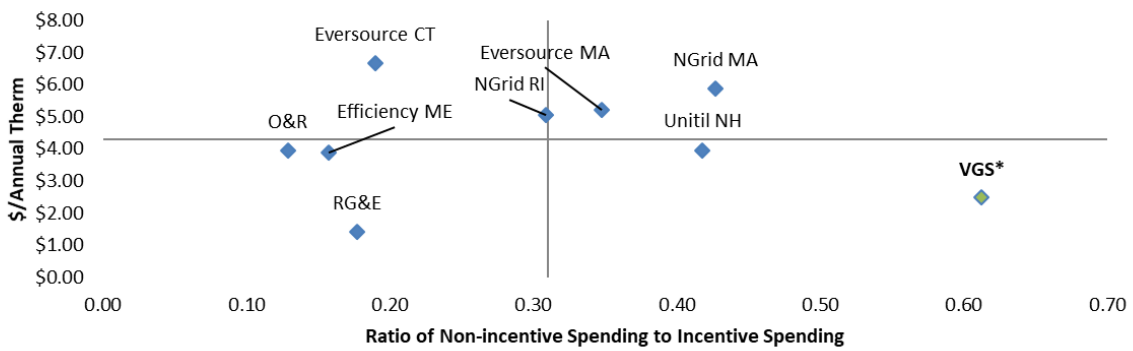
Figure 22: 2015 Gas Ratio of Non-Incentive Spending to Incentive Spending



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

In 2014 (Figure 23), Vermont Gas had an above average non-incentive to incentive spending ratio at 0.61, but a below average cost of savings at $2.46/therm. Although a larger portion of the Vermont Gas budget was spent on costs other than program incentives than comparable program administrators, the cost of savings was lower than most of the other PAs in the comparison group.

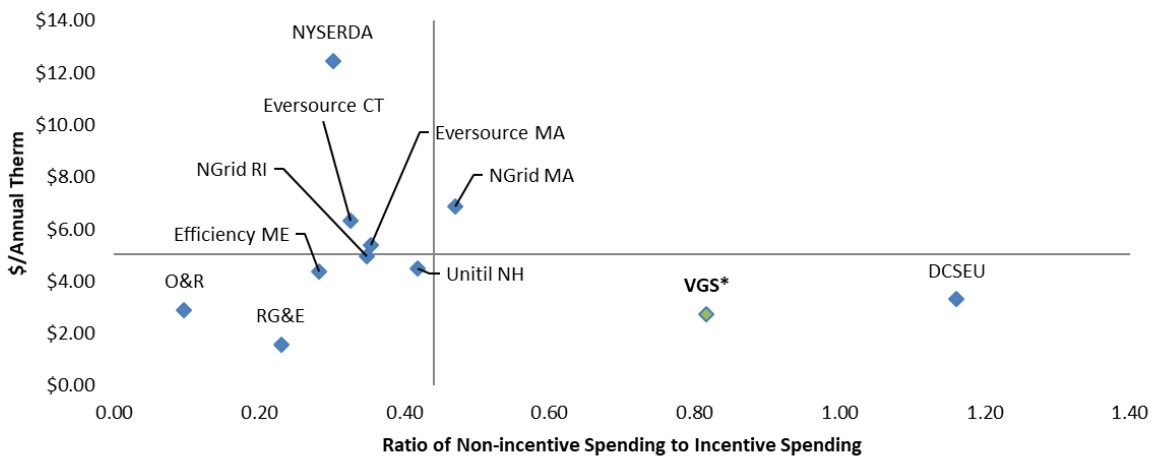
Figure 23: 2014 Gas Ratio of Non-Incentive to Incentive Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Results were similar in 2015 with Vermont Gas having above average non-incentive spending, but a below average cost of savings (Figure 24). In 2015, VGS had a non-incentive to incentive spending ratio of 0.82 which was higher than 2014 at 0.61. In 2015, VGS' cost of savings was lower at $2.27/therm compared to $2.46/therm in 2014.

Figure 24: 2015 Gas Ratio of Non-Incentive to Incentive Spending vs. $/therm Saved



*Note: VGS had not yet been designated an official EEU, and program data was not verified, in 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings. As such, gas program benchmarking results are presented to provide an historic administrative efficiency baseline for VGS peers during 2014 and 2015.

Conclusions and Considerations

Quantitative Findings

- In 2014 and 2015 both Efficiency Vermont and Burlington Electric spent above average on administrative costs as a percent of total efficiency spending compared to the average of several comparison Northeast and Mid-Atlantic PAs.
- In 2014, Burlington Electric's non-incentive spending as a percent of total spending was average, while Efficiency Vermont's non-incentive spending was above average. In 2015, Burlington Electric's non-incentive spending was below average and EVT's was above average.
- Both organizations had costs of saved energy ($/annual kWh saved) that were above average. These results suggest that there may be opportunities for Burlington Electric and Efficiency Vermont to reduce administrative and non-incentive costs to reduce their total cost of saved energy.
- Vermont Gas had higher than average administrative and non-incentive costs as a percent of total spending in 2014 and 2015 when compared to other gas PAs in the region. However, VGS had below average costs of saved energy ($/annual therm saved) relative to comparison gas PAs. This suggests that although Vermont Gas's administrative costs were above average, they were not necessarily a clear indicator that program funding was spent inefficiently. As previously mentioned, VGS savings numbers were not verified in years 2014 and 2015. Therefore, these results may not be directly comparable with other PAs that did have verified savings.

Overall Conclusions and Considerations

This benchmarking effort has highlighted that the use of a single metric to fully assess EEU operating performance may be insufficient. Administrative costs, non-incentive cost percentage, and cost of savings metrics all measure different, though overlapping, aspects of operating programs efficiently. To provide the most comprehensive assessment of program operations, multiple metrics are appropriate.

Further, benchmarking efforts, particularly against out of state PAs, is further complicated by apparent differences in how data are reported to REED. Differences in data reporting highlight the need for budget transparency and for the use of clear and consistent cost category definitions. Such efforts will not only ease benchmarking against out of state PAs, it will improve benchmarking efforts within Vermont by facilitating year-over-year comparisons.

While attaining consistency in cost category definitions and transparency in budget reporting may be a challenge, the ability to perform benchmarking and to support the development of key QPIs supports these continued efforts.

As Vermont continues its development of EEU QPIs it may need to consider:

- The importance of aligning cost category definitions, e.g., administrative costs, with those used by others such as REED. Some of this may be addressed by having the Vermont EEUs fully report program costs, specifically NRA (DSS) costs, to REED.
- The Department, either directly, or through the Vermont EEUs, may wish to work with NEEP to ensure greater clarity in cost reporting definitions and in consistency in PA reporting to REED, or seek an alternate data source for benchmarking purposes.
- EIA's collection and reporting of direct and indirect costs might provide an alternative to REED, as well as provide an additional benchmarking metric. However, similar issues with consistency of data reporting from an even larger set of PAs may limit the usefulness of this alternative. The Department may want to further investigate this option.
- Ensuring consistency and transparency over time for Vermont EEU reporting. For example, what should be included in the administrative cost category? Once definitions are decided on, they should remain in place as long as is practical to allow comparisons of metrics over time. The Department may need to work with the EEUs to ascertain what changes in their reporting systems would be needed and the timeframe in which such changes could be implemented.
- Determining the appropriate level of budget cost reporting granularity. The Department should review and revise as necessary the level of cost category reporting granularity. This would facilitate the aggregation of costs for different and higher levels of reporting and benchmarking such as administrative costs or indirect costs. Again, any such changes may require changes in EEU cost tracking and reporting systems and may need to be phased in over time.
- Are any of the cost allocation approaches in other states worth emulating in Vermont? Similarly, do the cost category definitions used in states like Massachusetts provide a potentially useful starting point to define cost categories in Vermont?
- The Vermont EEUs should specify their administrative fees and any other indirect and fringe rates in their reporting routinely and also to the Department upon request.
- Whether to include some or all non-resource acquisition costs as part of reporting "full" program costs. To the extent that NRA costs are included, how are they assigned, if at all, to specific programs (Major markets)? Alternatively, they could be reported out in separate budget line items.
- Which metrics to retain or add as QPIs? For example, is the incentive to non-incentive ratio QPI a useful and/or intuitive metric, or does reporting the percentage of either incentive or non-incentive program costs provide the same information in a more understandable manner?

Metric-Specific Considerations

Consistent Definition of Administrative Costs

For administrative efficiency, this benchmarking effort has highlighted the need for the use of a consistent definition of administrative costs. As noted above and as also documented in Appendix A, the administrative cost definition used by EVT and BED for in-state reporting does not fully align with the definition used by REED. There is no consistent definition of administrative costs. For example, Vermont's PUC annual audit definition of administrative cost includes evaluation, applied R&D, and education, which do not appear to be part of the REED definition of administration cost. Conversely, the REED definition includes contractor and direct installation costs, which are not considered administrative costs in Vermont. Further, there appear to be potential inconsistencies within Vermont as to what costs are included as administrative costs. For example, Burlington Electric includes marketing costs in its administrative costs. The other two EEUs and REED do not include marketing as an administrative cost.

While the Vermont EEU and REED definitions of administrative costs may not fully align, care should be taken in using REED's administrative cost definition to define the term in Vermont as it may not best meet Vermont's needs. As noted above, requiring sufficient cost tracking and reporting granularity may allow cost data to be aggregated to address multiple and differing administrative cost definitions.

As a starting point for developing a consistent EEU definition of administrative costs, a subset of the Vermont administrative cost definition used in prior PUC annual reporting should be considered. Inclusion of the proposed cost categories below are based on review and comparison of the definitions and cost categories of the different administrative cost definitions in Appendix A, cost categories used in other jurisdictions, as well as considering what costs might be excluded and considered as program implementation costs. If performance incentives or mark-up fees (performance incentives and operations fees) are not identified as administrative costs it is recommended that they be identified in as a stand-alone category, so these costs can be easily identified and tracked over time.

- General Administration
- Information Technology
- Planning and Reporting
- Policy and Public Affairs
- Additional compensation or margin (including performance incentives and operations fees)

While adopting such a definition would not necessarily facilitate direct comparisons with the REED data against out-of-state peers, Vermont stakeholders may determine that a Vermont-specific definition of administrative cost provides better alignment with state policy goals. However, carefully defining the cost categories to be reported in Vermont would allow costs to be aggregated to address definitions of administrative and incentive costs, such as those used by REED. The Department and the EEUs should review and discuss the costs and timing of providing additional cost reporting granularity. Once agreed to, any administrative cost definition would ideally be used consistently across all EEUs and over time to facilitate future benchmarking efforts.

While consideration of administrative costs is an important metric to assess EEU operations, and are a significant cost component, administrative costs are not the only driver of efficiency program expenses. Therefore, other program metrics could be reported out by the EEUs on an ongoing to basis to allow a more comprehensive assessment of EEU operations. Specifically, the Department should consider having the EEUs report cost of savings and incentive vs. non-incentive costs metrics. Reporting out direct vs. indirect costs may also be a potential addition, though thought should be given as to what additional insights this metric might provide beyond those already reported or proposed above.

Inclusion of Non-Resource Acquisition Costs in Vermont EEU Budget Reporting

The continued exclusion of non-resource acquisition costs from the calculation of certain metrics should be reassessed. None of the out-of-state peer organizations benchmarked in this study excluded those type of costs. However, this does not mean that the Vermont EEUs should stop tracking and reporting out these costs separately. There may be benefits to continue to have these costs tracked and reported out to assess consistency with state policy goals and for other reasons.

Incentive vs. Non-Incentive Costs

For an incentive vs. non-incentive cost metric, the higher-level nature of the cost data needed to do the calculations raises fewer questions as to how costs are assigned and allocated, at least at the portfolio level. However, if incentive vs. non-incentive cost metrics are to be used at the program level, then many of the same issues of determining total program costs that are noted above for cost of savings will also need to be addressed. Further, as noted above, other program offerings and activities such as account management and technical services may be able to increase program participation and measure penetration rates while using lower incentives. Incentive based metrics might result in unintended consequences, potentially dissuading Vermont EEUs from pursuing these non-incentive customer activities. Finally, on a forward going basis when developing metrics for administrative efficiency, consideration should be given to expanding the definition of “incentives” to also include the cost of other services that have a direct financial benefit to customers, such as the labor associated with direct install measures and technical assistance.

Cost of Savings and Cost Reporting Categories

For cost of savings, reporting could initially be provided at the portfolio level based on annual savings, as presented above. Over time, this reporting could be expanded to the sector and program (Major market) level and include lifetime as well as annual savings. The availability of sector and program level cost of savings granularity will provide better insights into what is driving changes at the portfolio level. As discussed above in some detail in the Cost of Savings section, cost of savings metrics for benchmarking can entail their own challenges.

If sector and particularly program level reporting is to be provided, additional thought will need to be given as to how certain costs are allocated and reported out by sector or by program. A comparison of budget reporting in Massachusetts (Appendices C, D and E), Rhode Island (Appendix B) and Connecticut (Appendix F) found differences as to how sector level costs are reported. Consideration, and possible adoption, of similar cost reporting categories in Vermont may provide additional budget transparency.

In both Connecticut and Massachusetts multiple PAs administer programs within a statewide framework. The use of consistent cost categories ensures comparability of reported cost data. Connecticut has had its current cost categories in place for over a decade. Massachusetts undertook an effort several years ago to develop the cost category definitions and assignments in Appendices D and E and requires their use by all electric and gas PAs in the state.

Next Steps

In consultation with the EEUs and other interested stakeholders, the Department should consider the following next steps to facilitate future benchmarking efforts.

- Adopt a consistent definition of administrative costs for all EEUs and define the level of reporting granularity to allow all cost data to be aggregated to meet differing definitions. For example, to address possible differences in how Vermont and REED define administrative costs. For higher-level reporting categories consider ease of rolling up costs as either direct or indirect costs.
- Determine whether RA and DSS/NRA cost allocations and reporting should be retained. If they are, develop and provide explicit guidance as to how program costs are to be allocated to each of these two higher level cost reporting categories.
- Carefully define the components for each metric considered as a potential QPI, possibly informed by work in other jurisdictions, and determine what changes need to be made to each Vermont EEU's cost category definitions and reporting. If the necessary data are not currently reported by the Vermont EEUs, ascertain the costs and time involved for the EEUs to develop the necessary budget tracking and reporting systems.
- Review the possible QPIs and specify which are suitable to be proposed to the PUC and subsequently reported on by the Vermont EEUs. A single metric to fully assess EEU operating performance may be insufficient. Administrative cost percentage, non-incentive cost percentage, and cost of savings metrics all measure different, though overlapping, aspects of operating programs efficiently. To provide the most comprehensive assessment of program operations, multiple metrics are appropriate.

Appendix A – Summary of 2014 and 2015Administrative Cost Definitions

	2014 and 2015 Administrative Cost Definitions	Administrative Costs Reported to REED
NEEP REED Database	Program administration and costs associated with implementation of programs, including direct installation costs, program implementation contractor services, not including program marketing cost.	Same
VT EEU Fund Annual Independent Audit	The EEU Fund Audit considers the following cost categories as administrative costs: • **Applied R&D** • **Information Technology** • **Education** • **Planning and Reporting** • **Evaluation** • **Policy and Public Affairs** • **General Administration** • **Performance Incentives**	N/A
3-Year Cost Effectiveness Audit	This PUC audit considers all EEU program costs except incentives to be administrative costs. However, it is not clear if performance incentives, operations fees, PSD evaluation costs, and Fiscal Agent/ other costs are in included.	N/A
VGS	VGS **Administrative Costs** include all costs incurred related to the program including: management, tracking, reporting, marketing, program development and infrastructure, education & training, general administration, information technology, planning and reporting; except for those costs included in the audit, incentives, and evaluation cost categories. Those categories excluded include: • **Audit** (Payments to utility staff or contractors for performing analyses, audits, inspections, and verifications. Also includes cost for energy ratings.) • **Incentives** (Incentive payments to customers and/or trade allies, including direct installation costs if the utility pays) • **Evaluation** (Evaluation costs, excluding tracking and reporting expenses) (Source: VGS via PSD Benchmarking Report Contractor EFG/Optimal)	In 2014, VGS reported the sum of its Administrative and Audit costs as administration costs in REED. In 2015, VGS reported administration costs as the sum of its administrative costs and an extracted portion of audit costs that were attributable to purposes other than performing audits.
EVT	EVT resource acquisition administration costs include staff time for EVT senior management, budgeting and financial oversight associated with resource acquisition. Administration costs also include the 1.8% operations fee (margin), corporate indirect charges that were applied to Incentives to Participants, and operation fee on indirect charges applied to incentives. Administrative costs incurred as part of the Non-Resource Acquisition portion of EVT's budget are not included in these costs. Efficiency Vermont R**esource Acquisition Administration costs** include:	Resource acquisition administration costs found in annual reporting, as described in column to the left.

	• Efficiency Vermont senior management, budgeting and financial oversight for resource acquisition activities, and • Operations fee (1.8%) and corporate indirect charges that were applied to Incentives to Participants. (see page 127 at #6 of Efficiency Vermont's 2017 Savings Claim Summary). Efficiency Vermont **Development and Support Service General Administration costs** include: • Efficiency Vermont's senior management staff in preparing for and administering general staff meetings • Coordinating program implementation; and • Management, monitoring, and internally communicating overall performance and spending. (see page 28 of the Efficiency Vermont 4/7/2017 filing in the Demand Resources Plan proceeding – EEU-2016-03) The definitions above are exclusive to the RA Administration and DSS General Administration costs of the Efficiency Vermont budget, and therefore **exclude**: • All other Development and Support Service Costs • All other Resource Acquisition Costs	
BED	BED **resource acquisition administration costs** fall into five main categories: •**General** (Costs include general management, budgeting, financial management and legal costs directly associated with program implementation such as contract review). •**Implementation** (Implementation management and administrative costs include costs related to business development and customer service, data management, and other program administrative costs directly related to implementation.) •**Planning** (Costs related to program design and planning, program screening and other similar functions.) •**Marketing** (Costs related to marketing and outreach.) •**IT Development** (IT development and maintenance costs.) **Non-Resource Acquisition Administrative costs** incurred as part of the Non-Resource Acquisition portion of BED's budget **are not included** in these costs. Other categories **excluded** include: • **Energy Audit** (Costs related to conducting audits or analyses, preparing the package of efficiency measures, contract management and post project follow up) • **Incentives** (Direct payments made to participants to defray the costs of specific efficiency measures. If a program employs a shared savings mechanism or loan system, this category should include the utility share of the measure and carrying costs projected over the payment period, net of all projected participant payments. Also, incentives paid to manufacturers, wholesalers, builders, or other stakeholders. • **Evaluation** (Evaluation costs, excluding tracking and reporting expenses) Appendix 4.1 in BED's Annual Report provides definitions for all "administrative and "non-administrative cost" categories	Resource acquisition administration costs found in annual reporting, as described in column to the left, except for marketing costs which are reported as a separate cost category in REED.

Appendix B – Rhode Island 2018 Plan Budget

Table E-2
National Grid
2018 Electric Energy Efficiency Program Budget ($000)

	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
Non-Income Eligible Residential							
Residential New Construction	$63.9	$2.5	$407.0	$238.0	$52.1		$763.4
ENERGY STAR® HVAC	$70.2	$108.5	$1,494.9	$512.3	$18.8		$2,204.7
EnergyWise	$338.3	$414.9	$12,422.3	$1,453.9	$271.5		$14,900.8
EnergyWise Multifamily	$91.3	$43.8	$2,130.0	$711.0	$81.5		$3,057.7
ENERGY STAR® Lighting	$218.4	$516.2	$5,572.7	$269.6	$175.1		$6,752.0
Residential Consumer Products	$84.3	$568.7	$523.4	$642.0	$11.2		$1,829.6
Home Energy Reports	$84.7	$10.9	$2,466.2	$10.2	$52.3		$2,624.4
Energy Efficiency Education Programs	$0.0	$40.0	$0.0	$0.0	$0.0		$40.0
Residential Demonstration and R&D	$11.3	$63.5	$437.8	$235.0	$175.0		$922.6
Community Based Initiatives - Residential	$6.2	$80.0	$76.8	$0.0	$0.0		$163.0
Comprehensive Marketing - Residential	$5.7	$550.8	$0.0	$0.0	$0.1		$556.7
Residential Shareholder Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$1,690.7	$1,690.7
Subtotal - Non-Income Eligible Residential	**$974.4**	**$2,399.9**	**$25,531.1**	**$4,072.0**	**$837.6**	**$1,690.7**	**$35,505.7**
Income Eligible Residential							
Single Family - Income Eligible Services	$272.5	$129.2	$7,087.4	$1,596.8	$229.1		$9,315.0
Income Eligible Multifamily	$85.5	$9.5	$1,880.0	$515.3	$63.0		$2,553.2
Income Eligible Shareholder Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$593.4	$593.4
Subtotal - Income Eligible Residential	**$358.0**	**$138.7**	**$8,967.4**	**$2,112.1**	**$292.1**	**$593.4**	**$12,461.7**
Commercial & Industrial							
Large Commercial New Construction	$239.9	$367.7	$4,193.4	$1,182.6	$122.0		$6,105.7
Large Commercial Retrofit	$659.4	$276.2	$19,352.8	$3,241.6	$456.7		$23,986.6
Small Business Direct Install	$288.1	$336.9	$5,625.4	$463.2	$196.6		$6,910.2
Commercial Demonstration and R&D	$19.4	$58.0	$515.8	$360.6	$40.0		$993.8
Community Based Initiatives - C&I	$1.7	$20.0	$19.2	$0.0	$0.0		$40.9
Comprehensive Marketing - C&I	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
Finance Costs	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
RI Infrastructure Bank	$0.0	$0.0	$5,000.0	$0.0	$0.0		$5,000.0
Commercial & Industrial Shareholder Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$2,151.86	$2,151.9
Subtotal - Commercial & Industrial	**$1,208.5**	**$1,058.8**	**$34,706.5**	**$5,248.0**	**$815.3**	**$2,151.9**	**$45,189.1**
Regulatory							
OER	$706.1	$0.0	$0.0	$0.0	$0.0		$706.1
EERMC	$706.1	$0.0	$0.0	$0.0	$0.0		$706.1
Subtotal - Regulatory	**$1,412.1**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$1,412.1**
Grand Total	**$3,953.0**	**$3,597.4**	**$69,205.1**	**$11,432.1**	**$1,945.0**	**$4,436.0**	**$94,568.6**
System Reliability Procurement							$399.3

Notes:
(1) 2017 Commitments are anticipated to be $0.
(2) For more information on Finance Costs, please refer to the 2018 C&I Program Description, Attachment 2.
(3) OER and EERMC total 2.0% of customers' EE Program Charge collected on Table E-1, minus 2%.
(4) System Reliability funds are included for illustrative purposes. They are part of the 2018 System Reliability Procurement Report, filed as a separate docket.

Appendix C – Massachusetts 2017 Budget Reporting

Program Administrator Budgets, Plan Year Summary
2017 Planned vs. Evaluated
Statewide Electric
June 8, 2018

2017 Planned Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program
	Program Planning and	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance &	Evaluation and Market	Total Program				
A - Residential	**10,833,896**	**12,977,740**	**196,745,198**	**43,061,823**	**6,774,529**	**270,393,187**	**12,963,021**	**283,356,208**	**75**	**2.64**
A1 - Residential Whole House	6,084,730	4,002,703	114,063,693	33,062,625	4,879,528	162,093,278	7,105,696	169,198,974	142	2.48
A1a - Residential New Construction	571,790	186,102	5,231,447	812,823	257,664	7,059,826	685,439	7,745,265	1,375	5.67
A1b - Residential Multi-Family Retrofit	792,090	577,168	13,093,289	2,876,004	692,574	18,031,125	177,176	18,208,301	929	0.76
A1c - Residential Home Energy Services - Measures	3,694,799	1,631,175	89,798,524	13,112,440	3,503,791	111,740,730	5,930,449	117,671,178	5,386	2.94
A1d - Residential Home Energy Services - RCS	629,405	1,565,069	-	13,203,931	216,438	15,614,844	-	15,614,844		-
A1e - Residential Behavior/Feedback Program	396,646	43,189	5,940,432	3,057,426	209,060	9,646,754	312,632	9,959,385	9	2.01
A2 - Residential Products	2,774,114	6,082,742	61,128,733	5,984,297	1,895,001	77,864,888	5,857,325	83,722,213	32	4.00
A2a - Residential Heating & Cooling Equipment	705,810	428,484	9,823,511	1,323,468	274,034	12,555,307	194,352	12,749,660	324	1.51
A2b - Residential Consumer Products	391,225	1,966,137	2,084,103	2,346,593	236,122	7,024,179	173,266	7,197,445	183	1.85
A2c - Residential Lighting	1,677,080	3,688,122	49,221,118	2,314,236	1,384,845	58,285,401	5,489,707	63,775,109	25	4.80
A3 - Residential Hard-to-Measure	1,975,052	2,892,295	21,552,773	4,014,902	-	30,435,021	-	30,435,021		-
A3a - Residential Statewide Marketing	-	1,515,055	-	-	-	1,515,055	-	1,515,055		-
A3b - Residential Statewide Database	156,311	-	-	-	-	156,311	-	156,311		-
A3c - Residential DOER Assessment	1,091,163	-	-	-	-	1,091,163	-	1,091,163		-
A3d - Residential EEAC Consultants	-	-	-	-	-	-	-	-		
A3e - Residential Sponsorships & Subscriptions	467,542	96,442	-	-	-	563,983	-	563,983		-
A3f - Residential HEAT Loan	82,735	183,903	21,132,587	1,978,487	-	23,377,712	-	23,377,712		-
A3g - Residential Workforce Development	-	-	-	197,879	-	197,879	-	197,879		-
A3h - Residential R&D and Demonstration	-	39,695	420,186	486,588	-	946,470	-	946,470		-
A3i - Residential Education	177,300	1,057,200	-	1,351,948	-	2,586,448	-	2,586,448		-
B - Low-Income	**3,515,222**	**965,054**	**49,753,295**	**11,945,558**	**1,919,803**	**68,098,932**	**1,595,000**	**69,693,932**	**2,129**	**1.24**
B1 - Low-Income Whole House	2,331,430	665,520	49,753,295	11,945,558	1,919,803	66,615,606	1,595,000	68,210,606	2,082	1.27
B1a - Low-Income Single Family Retrofit	1,253,589	392,019	26,048,952	6,152,692	817,463	34,664,716	1,106,001	35,770,716	3,366	1.60
B1b - Low-Income Multi-Family Retrofit	1,077,841	273,501	23,704,343	5,792,866	1,102,340	31,950,890	489,000	32,439,890	1,473	0.91
B2 - Low-Income Hard-to-Measure	1,183,792	299,534	-	-	-	1,483,326	-	1,483,326		-
B2a - Low-Income Statewide Marketing	-	282,029	-	-	-	282,029	-	282,029		-
B2b - Low-Income Statewide Database	30,346	-	-	-	-	30,346	-	30,346		-
B2c - Low-Income DOER Assessment	365,620	-	-	-	-	365,620	-	365,620		-
B2d - Low-Income Energy Affordability Network	672,913	-	-	-	-	672,913	-	672,913		-
B2e - Low-Income Sponsorships & Subscriptions	114,912	17,505	-	-	-	132,417	-	132,417		-
C - Commercial & Industrial	**20,771,978**	**4,380,128**	**210,400,371**	**39,353,331**	**7,840,002**	**282,745,810**	**19,476,581**	**302,222,391**	**11,362**	**3.50**
C1 - C&I New Construction	5,772,424	556,550	40,437,685	11,361,113	1,786,273	59,914,047	4,842,722	64,756,769	51,000	4.35
C1a - C&I New Buildings & Major Renovations	4,032,603	454,870	22,202,000	9,260,504	1,270,816	37,220,792	2,538,654	39,759,446	58,329	3.75
C1b - C&I Initial Purchase & End of Useful Life	1,739,822	101,681	18,235,685	2,100,609	515,457	22,693,255	2,304,068	24,997,323	42,285	5.33
C2 - C&I Retrofit	12,042,618	2,348,288	169,715,186	27,179,718	6,053,729	217,339,538	14,633,860	231,973,398	9,167	3.36
C2a - C&I Existing Building Retrofit	7,379,782	1,291,266	90,043,225	16,209,747	3,095,743	118,019,763	9,448,513	127,468,276	61,310	3.79
C2b - C&I Small Business	2,887,561	762,171	48,192,594	7,855,342	1,804,349	61,502,017	2,385,240	63,887,257	12,592	2.23
C2c - C&I Multifamily Retrofit	536,561	123,232	8,077,136	1,950,024	403,368	11,090,321	135,838	11,226,159	20,462	0.83
C2d - C&I Upstream Lighting	1,238,714	171,618	23,402,231	1,164,605	750,269	26,727,437	2,664,269	29,391,707	1,634	5.12
C3 - C&I Hard-to-Measure	2,956,935	1,475,289	247,500	812,500	-	5,492,225	-	5,492,225		-
C3a - C&I Statewide Marketing	-	1,212,228	-	-	-	1,212,228	-	1,212,228		-
C3b - C&I Statewide Database	122,393	-	-	-	-	122,393	-	122,393		-
C3c - C&I DOER Assessment	1,885,488	-	-	-	-	1,885,488	-	1,885,488		-
C3d - C&I EEAC Consultants	-	-	-	-	-	-	-	-		
C3e - C&I Sponsorships & Subscriptions	949,054	128,062	-	-	-	1,077,116	-	1,077,116		-

Page 1

Appendix D – Massachusetts Budget Cost Categories

Program Planning and Administration ("PP&A") - includes costs associated with developing program plans, including market transformation plans, R&D (excluding R&D assigned to Evaluation and Market Research), day-to-day program administration, including labor, benefits, expenses, materials, supplies, overhead costs, any regulatory costs associated with energy efficiency activities, database/data repository development and maintenance, sponsorships and subscriptions, and energy efficiency services contracted to non-affiliated companies, *e.g.*, outside consultants used to prepare plans, screen programs, improve databases and perform legal services. This category also includes internal salaries for administrative employees/ tasks, including program managers who do not have direct sales and technical assistance contact with customers.

Marketing and Advertising - includes costs for the development and implementation of marketing strategies and costs to advertise – through television, radio, billboards, brochures, telemarketing, web-sites and mailings – regarding the existence and availability of energy efficiency programs or technologies, and to induce customers or trade allies to participate in energy efficiency programs. These costs include internal salaries for employee functions related to marketing and advertising.

Participant Incentives - includes funds paid by the reporting Program Administrator to or on behalf of customers or trade allies as rebates or in other forms. Participant incentives includes costs that directly benefit customers, including permit fees, pre-weatherization expenses, repairs, and interest buydown.

Sales, Technical Assistance & Training ("STAT") **-** includes administration,

sales technical assistance and training costs to motivate: (1) customers to install energy efficiency products and services; (2) retailers to stock energy efficiency products; (3) trade professionals to offer energy efficiency services; (4) manufactures to make energy efficiency products; and (5) use of vendor services and suppliers that demonstrate benefits of energy efficiency. This category also includes costs not directly tied to savings, including residential assessments, technical assistance studies, contractor fees and performance bonuses, vendor cost of money; lead vendor fees and internal salaries for employees with direct customer sales and technical assistance contact.

Evaluation and Market Research - includes costs associated with evaluation activities: costs related to cost-effectiveness evaluation, market research (*e.g.*, baseline studies, market assessments and surveys), impact and process evaluation reports, tracking and reporting program inputs and outputs, funding studies, and other costs clearly associated with evaluating the program. This category also includes internal salaries for employee functions related to evaluating the programs.

Appendix E – Assignment of Massachusetts Vendor Costs to Budget Cost Categories

Program Administrator Vendor Cost Categories

Row Number	Cost Type	Elec/Gas/Both	Cost Category (to be applied 1/1/2016)	Additional Info/Comments
1	Statewide Database/Mass Save Data	B	Eval	Not in PP&A to enable cost tracking separately from DOER assessment
2	Builder and Equipment Incentives	B	Incentive	
3	Heating System Rebates	B	Incentive	
4	Lighting/ISMs	B	Incentive	
5	Permits	B	Incentive	
6	Pre-weatherization Incentive	B	Incentive	
7	Rater Inspection Fees	B	Incentive	
8	Rebates/ Incentives	B	Incentive	
9	Refrigerator Costs within Low-Income	E	Incentive	
10	Repairs within the Low-Income Initiatives	B	Incentive	
11	Total Interest Subsidy	B	Incentive	
12	Weatherization Costs	B	Incentive	
13	Marketing and Advertising Support	B	Marketing	
14	Cost Effectiveness Screening	B	PP&A	
15	EEAC Consultants/Regulatory Assessments/LEAN	B	PP&A	
16	Legal Services	B	PP&A	
17	Planning Support	B	PP&A	
18	Tracking System Maintenance	B	PP&A	
19	Account Management	B	STAT	
20	Audit Fees	B	STAT	
21	Call Center Activities	B	STAT	
22	Circuit Rider Activities	B	STAT	
23	Postage Associated with Rebate Processing	B	STAT	
24	Processing Fee	B	STAT	
25	Program Administration Fees	B	STAT	
26	Quality Assurance and Control activities	B	STAT	
27	Reporting	B	STAT	
28	Technical Assistance Studies	B	STAT	
29	Technical Support for Contractors	B	STAT	
30	Travel	B	STAT	
31	Contractor Fees	B	STAT (contractor services/fees); Incentive (measure costs/labor)	
32	Training	B	STAT (Workforce Development)	
33	Workforce Development/Training	B	STAT (Workforce Development)	

Appendix F – Eversource (CT) 2018 Plan Budget (February 9, 2018 version)

Table C

Eversource CT Electric 2018 EE Budget Details - Feb 9 2018

Eversource CT Electric EE BUDGET ($000)	Labor	Materials & Supplies	Outside Services	Contractor Labor	Incentives	Marketing	Other **	Administrative Expenses	TOTAL
Residential Retail Products	$ 101	$ 1	$ 786	$ 0	$ 5,025	$ 456	$ 36	$ 9	$ 6,415
Total - Consumer Products	**$ 101**	**$ 1**	**$ 786**	**$ 0**	**$ 5,025**	**$ 456**	**$ 36**	**$ 9**	**$ 6,415**
Residential New Construction	$ 156	$ 1	$ 18	$ 1	$ 1,915	$ 43	$ 17	$ 9	$ 2,161
Home Energy Solutions - Core Services	$ 1,108	$ 4	$ 596	$ 50	$ 8,944	$ 642	$ 21	$ 36	$ 11,401
Home Energy Solutions - HVAC, Water Heaters	$ 59	$ 1	$ 196	$ -	$ 2,910	$ 91	$ 18	$ 18	$ 3,294
HES Income Eligible	$ 1,335	$ 5	$ 315	$ 20	$ 10,849	$ 608	$ 46	$ 54	$ 13,232
Residential Behavior	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ -	$ 500
Subtotal Residential	**$ 2,760**	**$ 12**	**$ 2,412**	**$ 71**	**$ 29,644**	**$ 1,841**	**$ 138**	**$ 126**	**$ 37,003**
COMMERCIAL & INDUSTRIAL									
C & I LOST OPPORTUNITY									
Energy Conscious Blueprint	$ 998	$ 4	$ 301	$ 76	$ 4,596	$ 152	$ 27	$ 10	$ 6,164
Total - Lost Opportunity	**$ 998**	**$ 4**	**$ 301**	**$ 76**	**$ 4,596**	**$ 152**	**$ 27**	**$ 10**	**$ 6,164**
C & I LARGE RETROFIT									
Energy Opportunities	$ 2,901	$ 5	$ 320	$ 344	$ 22,681	$ 310	$ 90	$ 180	$ 26,831
Business & Energy Sustainability (O&M, RetroCx, BSC, PRIME)	$ 120	$ 2	$ 298	$ -	$ 1,640	$ 75	$ 6	$ 22	$ 2,164
Total - C&I Large Retrofit	**$ 3,021**	**$ 7**	**$ 618**	**$ 344**	**$ 24,321**	**$ 385**	**$ 96**	**$ 202**	**$ 28,994**
Small Business	$ 1,090	$ 5	$ 88	$ -	$ 9,110	$ 230	$ 27	$ 2,000	$ 12,550
Subtotal C&I	**$ 5,109**	**$ 16**	**$ 1,007**	**$ 420**	**$ 38,028**	**$ 767**	**$ 150**	**$ 2,212**	**$ 47,708**
OTHER - EDUCATION & ENGAGEMENT									
Educate the Public	$ 20	$ -	$ 557	$ -	$ -	$ 35	$ -	$ 19	$ 631
Customer Engagement	$ 276	$ -	$ 1,117	$ 85	$ -	$ -	$ -	$ -	$ 1,478
Educate the Students	$ 5	$ -	$ 192	$ -	$ -	$ 10	$ 1	$ 3	$ 211
Educate the Workforce	$ 5	$ -	$ 130	$ -	$ -	$ -	$ -	$ -	$ 135
Subtotal Education & Engagement	**$ 306**	**$ -**	**$ 1,996**	**$ 85**	**$ -**	**$ 45**	**$ 1**	**$ 22**	**$ 2,455**
OTHER - PROGRAMS/REQUIREMENTS									
Residential Loan Program (includes ECLF and OBR)	$ -	$ -	$ 453	$ -	$ -	$ -	$ -	$ -	$ 453
C&I Financing Support	$ -	$ -	$ 2,500	$ -	$ -	$ -	$ -	$ -	$ 2,500
Research, Development & Demonstration	$ 60	$ 2	$ 93	$ 2	$ -	$ -	$ -	$ 5	$ 162
Subtotal Programs/Requirements	**$ 60**	**$ 2**	**$ 3,046**	**$ 2**	**$ -**	**$ -**	**$ -**	**$ 5**	**$ 3,115**
OTHER - LOAD MANAGEMENT									
ISO Load Response Program	$ 100	$ -	$ 306	$ -	$ 1,501	$ -	$ -	$ -	$ 1,907
Residential Demand Response	$ 19	$ -	$ 785	$ -	$ -	$ -	$ -	$ -	$ 804
C&I Demand Response	$ 62	$ -	$ 338	$ -	$ -	$ -	$ -	$ -	$ 400
Subtotal Load Management	**$ 181**	**$ -**	**$ 1,429**	**$ -**	**$ 1,501**	**$ -**	**$ -**	**$ -**	**$ 3,111**
OTHER - ADMINISTRATIVE & PLANNING									
Administration	$ 512	$ 4	$ -	$ 12	$ -	$ -	$ 20	$ 50	$ 598
Marketing Plan	$ -	$ -	$ -	$ -	$ -	$ 86	$ 1	$ 1	$ 88
Planning	$ 388	$ 1	$ -	$ 50	$ -	$ -	$ 10	$ 12	$ 461
Evaluation Measurement and Verification	$ 51	$ 1	$ 969	$ -	$ -	$ -	$ 1	$ 1	$ 1,023
Evaluation Administrator	$ -	$ -	$ 179	$ -	$ -	$ -	$ -	$ -	$ 179
Information Technology	$ 374	$ -	$ 1,094	$ 45	$ -	$ -	$ -	$ 50	$ 1,562
Energy Efficiency Board Consultants	$ -	$ -	$ 230	$ -	$ -	$ -	$ -	$ -	$ 230
Audits - Financial and Operational	$ -	$ -	$ 60	$ -	$ -	$ -	$ -	$ -	$ 60
Performance Management Incentive (PMI)	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,371	$ -	$ 4,371
Subtotal Admin/Planning Expenditures	**$ 1,325**	**$ 6**	**$ 2,532**	**$ 107**	**$ -**	**$ 86**	**$ 4,403**	**$ 114**	**$ 8,572**
TOTAL BUDGET	**$ 9,741**	**$ 36**	**$ 12,422**	**$ 684**	**$ 69,173**	**$ 2,738**	**$ 4,692**	**$ 2,479**	**$ 101,965**

ENERGY FUTURES GROUP

Appendix B: Compensation Memo

MEMORANDUM

To:	Alexis Miles and Keith Levenson, Vermont Public Service Department
From:	Gretchen Calcagni, Optimal Energy and Glenn Reed, Energy Futures Group
Date:	September 15, 2017
Subject:	Update of Comparison of Compensation Framework for Selected Efficiency Vermont Peer Group Organizations

INTRODUCTION

The purpose of this memo is to provide a comparison of compensation frameworks for organizations that are most similar to VEIC/EVT. Many of the program administrators included in the forthcoming PSD-commissioned 2017 Vermont Benchmarking Study are investor owned utilities (IOUs). However, as described below, care should be taken in directly comparing compensation mechanisms in place for energy efficiency utilities (EEU) and for investor owned utilities (IOU). Note that the term EEU is used broadly in this memo, primarily to distinguish these efficiency delivery models from those offered by IOUs. Further distinctions among different EEU models are discussed below.

COMPARING VEIC/EVT COMPENSATION TO OTHER ORGANIZATIONS

Compensation mechanisms for IOUs have been in place for over two decades in some jurisdictions. Initially, these compensation mechanisms were approved by regulators and deployed for several reasons, including:

- Making shareholders "whole" due to revenue erosion from lost sales. This has become less of an issue as decoupling has become more prevalent. Also, some jurisdictions now allow for lost revenue recovery which partially undermines some of this rationale for a compensation mechanism.
- To get the attention of upper management to support an activity that was seen as "foreign" and counter to the overarching business objectives of an IUO to sell more of its product; either kWh or therms.
- To provide a means by which the IOU can share in the net benefits that it creates through its demand side management activities.

In comparison, regarding EEU compensation:

- There are no lost revenues or shareholders to be made "whole." Certain EEUs do not request performance based compensation, e.g., NYSERDA. In fact, most, if not all, EEUs are quasi-public agencies or operate under state charters as non-profits.
- Upper management by definition is dedicated to the mission of efficiency. Lost utility sales and revenues are not a concern. Declining sales are, in fact, a desired outcome and a measurement of success.
- For those EEUs operated by a third party, e.g., DC SEU, the compensation payment typically serves to reward staff, not shareholder, performance.

While many of the differing rationales for compensation between IOUs and EEUs continue to exist, compensation for both parties is typically tied to performance relative to a prescribed set of goals. This is reflected in the increasingly prevalent nomenclature for these payments as *performance incentives*. The goals tied to both IOU and EEU performance incentives typically include some measurement of savings; usually energy, but often also including benefits and net benefits. In addition, some portion of performance incentives may be tied to policy objectives, e.g., geographic or class equity, or to programmatic goals, e.g., the design and implementation of a new program component or offering.

For the few EEUs receiving performance incentives, they are being rewarded for meeting or exceeding specified performance goals. It is important to note, however, that in some cases performance goals may be structured in a way such that it is not possible for all the goals to be achieved. This may result in a program implementer needing to pick and choose the goals to pursue most aggressively, as was once the case with DC-SEU. In such a case, it is not possible to earn all of the available performance incentive. Regardless of whether performance goals are structured to be fully achievable or not, in meeting the goals, much, if not most, of any performance incentive paid to an EEU is directed to motivate and reward staff. Such practices are certainly common in the private sector. Whether the resulting EEU employee bonuses arising from payment of performance incentives are in line with any such payments to IOU staff was beyond the scope of this task.

EVT PEER GROUP COMPENSATION SUMMARY

The table below is an updated version of Table 1 in a 2014 memo from Navigant Consulting to the Public Service Department.[i] Table 1 provides a summary of the organization type and compensation status. The table also distinguishes the program administrator (e.g. Hawaii Public Utilities Commission), from hired third party implementation contractors (e.g. Leidos, a for-profit firm) that might be working under contract for the Program Administrator. The quantitative information included in the table below represents the maximum available performance based compensation in the most recent year data was available. In addition to the values in Table 1, email correspondence with a contact at the Energy Trust of Oregon suggests

that performance incentives for ETO contractors equal less than half a percent of ETO's budget. However, this value cannot be verified and therefore, has not been included in the table.

Table 1: EVT Peer Group Compensation Summary Matrix

DSM Program Administrators	Organization Type	Annual DSM Budget	Compensation for Program Administrator (Yes/No)	Compensation for 3rd Party IC (Yes/No)	Guaranteed 3rd Party Compensation (Annual Amount and % of Budget)	Performance Based Compensation (Annual Amount and % of Budget)	Total Compensation Available and % of Annual Budget
EVT/VEIC	Efficiency Utility Franchise	$48.3M ($145.0M over three years)[ii]	Yes	Yes (if you view EVT as a 3rd party to VEIC)	1.8% / $870k[iii]	2.7% / $1.3M[iv]	4.5% / $1.8M (annual) ($5.3M over 3 yrs)[v]
Energy Trust of Oregon	Non-Profit	$146.6M[vi]	No	Yes	0%	See text above	See text above
Efficiency Nova Scotia/ Efficiency One	Efficiency Utility Franchise	32.0M[vii]	No	No	0%	0%	0%
Burlington Electric Dept.	Municipal	2.2M[viii]	No	No	0%	0%	0%
Hawaii Energy – (Project of HI PUC.)/Leidos	State Government – PUC	$38.0M[ix]	No	Yes (Leidos- For-Profit)	0%	1.8% / $700k[x]	1.8% / $700k[xi]
Efficiency Maine	Quasi-State Gov't	$45.5M[xii]	No	No	0%	0%	0%
NYSERDA	Public Benefits Corporation	$225.3 M[xiii]	No	No for core EE implementation; Yes for community awareness groups	0% for core EE	0% for core EE	0% for core EE
Efficiency Smart- Ohio – (AMP-Ohio)/VEIC	Consortium of Municipal Utilities	$17.4M[xiv]	No	Yes (VEIC- Non-Profit)	2.4% / $416K[xv]	5.6%/ 972K[xvi]	8.0% / $~1.4M[xvii]
DC Sustainable Energy Utility/VEIC	Efficiency Utility Franchise	$20.0M[xviii]	No	Yes (VEIC-Non-Profit)	3.4% /$680K[xix]	4.0% / $800K [xx]	7.4% / $1.6M[xxi]

CONCLUSION

Including EVT, four of the nine surveyed EEUs or their program administrators are eligible to obtain performance-based compensation similar to that received by EVT: EVT, Efficiency Smart-Ohio, DC SEU and Hawaii Energy. For EVT, Efficiency Smart-Ohio, and DC-SEU, a not-for-profit program administrator (VEIC) is responsible for all aspects of program operations. For Hawaii Energy, a single for-profit program contractor (Leidos) administers the programs on behalf of the Hawaii Public Utilities Commission. In some cases, a single, long term contract is awarded for program administration such as for DC SEU, Efficiency Smart Ohio and Hawaii Energy. EVT has a long term 12-year Order of Appointment from the Public Utility Commission. For several of the EEUs, including NYSERDA, Energy Trust of Oregon, and Efficiency Maine, programs are managed with internal staff, with program implementation typically supported through the award of multiple, shorter contracts for specific programs or sets of programs.

As noted in Table 1 and described more fully in Appendix A, there are a variety of efficiency utility models. These include efficiency utility franchises like EVT and Efficiency Nova Scotia, non-profit administrators with long-term delivery contracts like Smart Energy-Ohio's arrangement with AMP Ohio, quasi-government agencies like NYSERDA and Hawaii Energy, and traditional utilities that have been awarded an efficiency utility franchise like Burlington Electric Department.

For this compensation comparison, EFG considers EVT's peers to be non-IOUs. Of these peers, some are more similar and some are less similar. These entities include the following:

Most similar non-IOU peers:

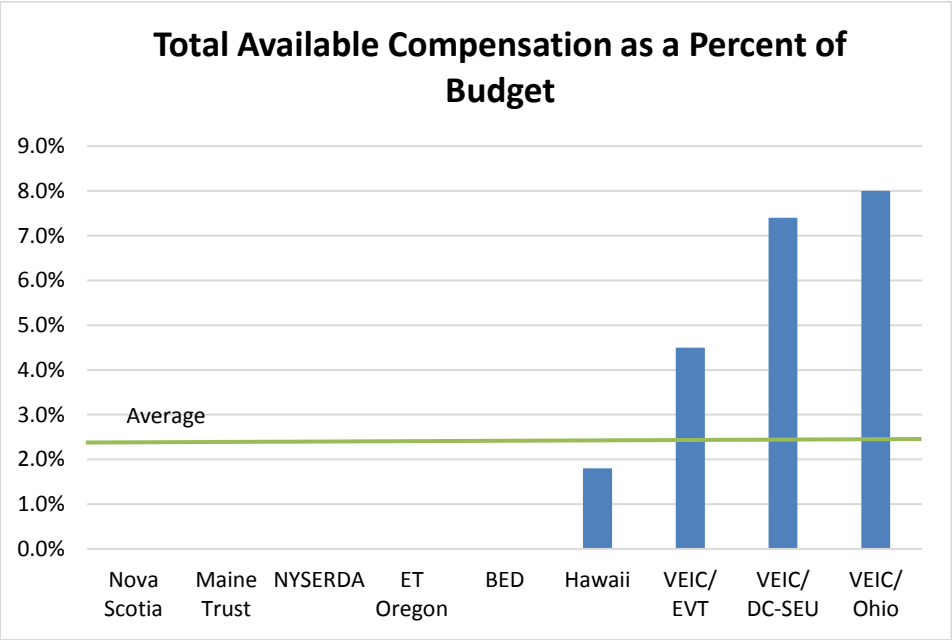
- DC-SEU (Efficiency Utility Franchise)
- Efficiency Smart-Ohio (Consortium of Municipal Utilities)
- Hawaii Energy (Quasi-State Government)
- Efficiency Nova Scotia (Efficiency Utility Franchise)
- Burlington Electric Department (Municipal)

Less similar non-IOU peers:

- Efficiency Maine Trust (Quasi-State Government)
- NYSERDA (Public Benefits Corporation)
- Energy Trust of Oregon (Non-profit)

The bar graph below illustrates where EVT's compensation falls in comparison to all non-IOU administrators considered in this memo. The average compensation rate for these entities is 2.4%. EVT's compensation rate of 4.5% is 2.1 percentage points greater than the average compensation rate relative to these non-IOU entities. When just looking at the group of most similar non-IOU program administrators, the average compensation rate is

3.6%. Compared to this smaller most similar group of program administrators, EVT's compensation rate is 0.9 percentage points larger.



APPENDIX A: PROGRAM ADMINISTRATOR PEER GROUP PERFORMANCE INCENTIVE NOTES[xxii]

This section is an updated version of the 2014 Navigant report which presents additional summary detail by program administrator with respect to the use of performance compensation. With additional time, EFG and Optimal could expand this discussion, and note in more detail performance compensation structure.

VEIC/ EVT: VEIC is a non-profit organization that delivers the EVT contract under a 12-year order of appointment from the Vermont Public Service Board. VEIC, as the program administrator for EVT, receives performance compensation based on achieving negotiated performance indicators. Compensation is both guaranteed (operations fee) and at risk (performance awards).

Burlington Electric Department (BED): BED is a municipal utility and does not receive performance compensation. In the prior compensation study, Navigant was uncertain if third party contractors working for BED receive performance compensation.

Efficiency Maine (EME): Efficiency Maine is a quasi-governmental program administrator that utilizes third party implementation contractors for program delivery. The administrator does not receive performance compensation. EFG confirmed that third-party program implementation contractors working for Efficiency Maine do not receive performance compensation.

Energy Trust of Oregon (ETO): Energy Trust of Oregon is a non-profit program administrator that utilizes third party implementation contractors for program delivery. The administrator (ETO) does not receive performance compensation. Third party implementation contractors working on behalf of ETO in most cases are eligible in to earn performance compensation for exceeding performance requirements in their contracts. Under this system, there are incentives for reaching certain performance levels and penalties for failure to perform up to certain levels. These incentives and penalties apply to savings goals, financial metrics, customer service standards and documentation for project audits. The general, outline for performance requirements is the same across programs, but there are variations reflecting differing market circumstances and customer types. Sources at ETO indicated that specific performance incentive values were not publicly reported.

Efficiency Nova Scotia (ENSC): Efficiency Nova Scotia is Nova Scotia efficiency utility. The franchise was established by legislation in 2014 and the franchise holder is Efficiency One. The administrator does not receive performance compensation. There is no overarching directive to provide contactors with performance-based incentives for achieving targets.

NYSERDA: NYSERDA is a public benefits corporation that utilizes third party implementation contractors for program delivery. The administrator does not receive performance compensation.

Efficiency Smart – Ohio: Efficiency Smart - Ohio is the DSM brand for American Municipal Power – Ohio, a network of municipal utilities. Optimal assumes AMP-Ohio, as a municipal utility program administrator, does not receive performance compensation. AMP Ohio utilizes third party implementation contractors (VEIC) for program delivery and issues performance compensation.

DC Sustainable Energy Utility (DC SEU): The DC Sustainable Energy Utility is a project funded and overseen by the District Department of Energy and Environment (a DC government agency) and implemented by the Sustainable Energy Partnership, a group of local for profit and non-profit organizations with VEIC as the prime contractor. The SEP receives performance incentives for a variety of performance metrics including energy savings for both electric and natural gas, renewable energy generation and generating "green collar" jobs.

Hawaii Energy: Hawaii Energy is a quasi-governmental program administrator that utilizes third party implementation contractors for program delivery. It is assumed that the administrator (Hawaii Public Utilities Commission) does not receive performance compensation. The third-party implementation contractor (Leidos Engineering- for-profit) can receive performance related compensation for achieving targets.

Leidos, the IC of Hawaii Energy, funds a "performance pool" hold back of approximately $700,000 annually through monthly holdback payments. Following evaluation, this performance pool of withheld funds may be earned commensurate with achievement across a series of Quantifiable Performance Indicators (QPIs) that are established in the contract.

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[i] Memo to Brian Cotterill and Matthew Walker, VT-PSD; From Toben Galvin, David Purcell, and Christy Zook, Navigant Consulting; Re: Comparison of Compensation Framework for Selected Efficiency Vermont Peer Group Organizations; April 28, 2014.

[ii] Attachment A and page 60 of Vermont Public Service Board order for Demand Resource Plan Proceeding dated 7/9/2014.

[iii] *Ibid*

[iv] *Ibid*

[v] *Ibid*

[vi] Year(s): 2015 Source(s): 2015 Annual Report to the Oregon Public Utility Commission & Energy Trust Board of Directors. Represents spending for energy efficiency programs.

[vii] Year(s): 2015. Source(s): Efficiency One 2015 Annual Report

[viii] Year(s): 2015. Source(s): Burlington Electric 2015 Energy Efficiency Annual Report

[ix] Year(s): 2015. Source(s): Hawaii Energy 2015 Annual Report

[x] Year(s): 2015. Source(s): Public Utilities Commission of the State of Hawaii Docket No. 2007-0323, Order No. 3470 Approving Leidos Engineering, LLC's Program Year 2015 Performance Award

[xi] *Ibid*
[xii] Year(s): FY2015; Efficiency Maine FY2015 Annual Report
[xiii] Year(s): 2015. Source(s): NYSERDA 2016 Annual Budget and Financial Plan. Represents spending for System Benefit Charge funded programs only.
[xiv] Year(s): 2016 Source(s): Personal communication with Vermont Energy Investment Corporation staff
[xv] *Ibid*
[xvi] *Ibid*
[xvii] *Ibid*
[xviii] Year(s): 2016 Source(s): Personal communication with Vermont Energy Investment Corporation staff
[xix] *Ibid*
[xx] *Ibid*
[xxi] *Ibid*
[xxii] Text taken from Memo Re: Comparison of Compensation Framework for Selected Efficiency Vermont Peer Group Organizations; April 28, 2014, and updated as necessary.