Efficiency Vermont

LEDs & Efficiency Programs: Plug & Play?

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Efficiency Vermont Background

Statewide energy efficiency utility that encourages the adoption of energy-efficient products and practices.

Administered by **Vermont Energy Investment Corporation (VEIC)**, an independent nonprofit energy efficiency program implementer.

Electric funding = **$37M per year**.

Efficiency Vermont LED Program History

Pilot projects & partner education started in 2008

Prescriptive LED categories offered since 2009

- Covers 12 interior and 6 exterior product categories

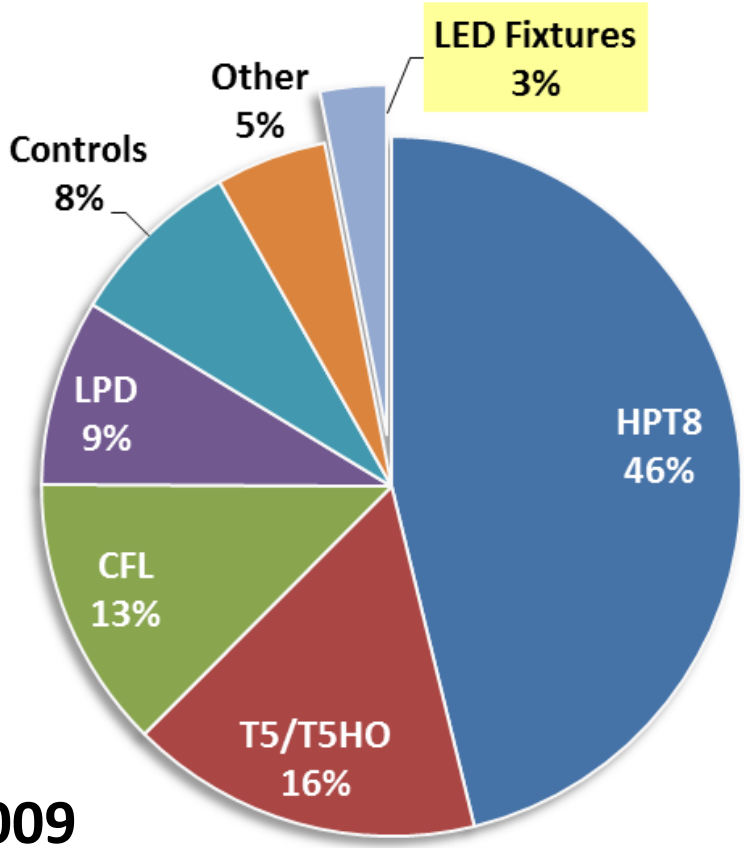
Two-tier rebate structure introduced in 2011

PREMIUM Tier LED Products	STANDARD Tier LED Products
• **ENERGY STAR®** qualified, or • **DesignLights™ Consortium (DLC)** approved Premium tier LED products are eligible for a **25% Premium** over standard rebates, as shown below.	• **Lighting Facts®** registered products that meet the criteria shown in the Photometric Performance Requirements Table on page 4. Standard tier LED products are eligible for the standard rebates shown below.

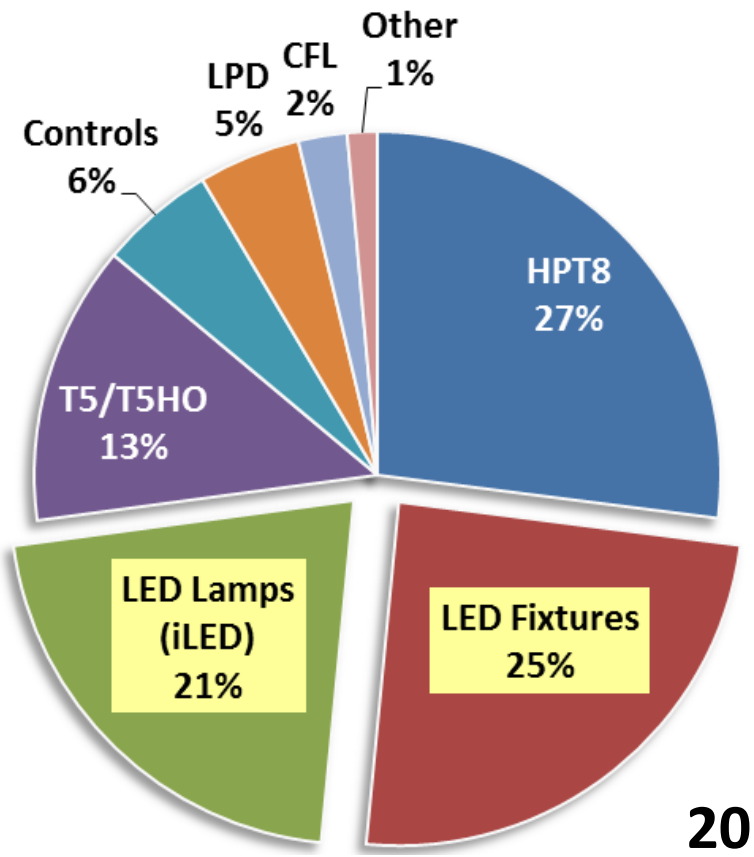
Upstream rebates for screw-base LED in 2012

- All directional and omni-directional lamp shapes

Efficiency Vermont LED Program Results



2009



2012

Commercial Lighting Portfolio (MWh savings)

LED Program Challenges

1. **Product Qualification**
2. Qualified Product List Confusion
3. Regulatory Compliance

Product Qualification

Why do efficiency programs require LED product qualification?

- **Regulatory:** Validate energy & lifetime claims (LM-79, LM-80, etc.)
- **Customer satisfaction:** Ensure product performance meets / exceeds threshold

Program self-qualification is not sustainable

- ENERGY STAR® & DesignLights™ Consortium play a vital role
- Efficiency programs sponsor the DLC effort and <u>provide approximately 50% of the funding</u>

Product Qualification

Product Performance & Quality

- Product must exceed incumbent technology performance
- Product must represent an upper tier of market

	Outdoor Pole Mount Fixtures			PAR Lamps		
	Lighting Facts	DLC	% Better	Lighting Facts	ENERGY STAR	% Better
Count	538	317		990	603	
Min Efficacy	**34**	**58**	**70%**	**22**	**37**	**70%**
Avg Efficacy	70	74	6%	53	55	4%

LED Program Challenges

1. Product Qualification
2. **Qualified Product List Confusion**
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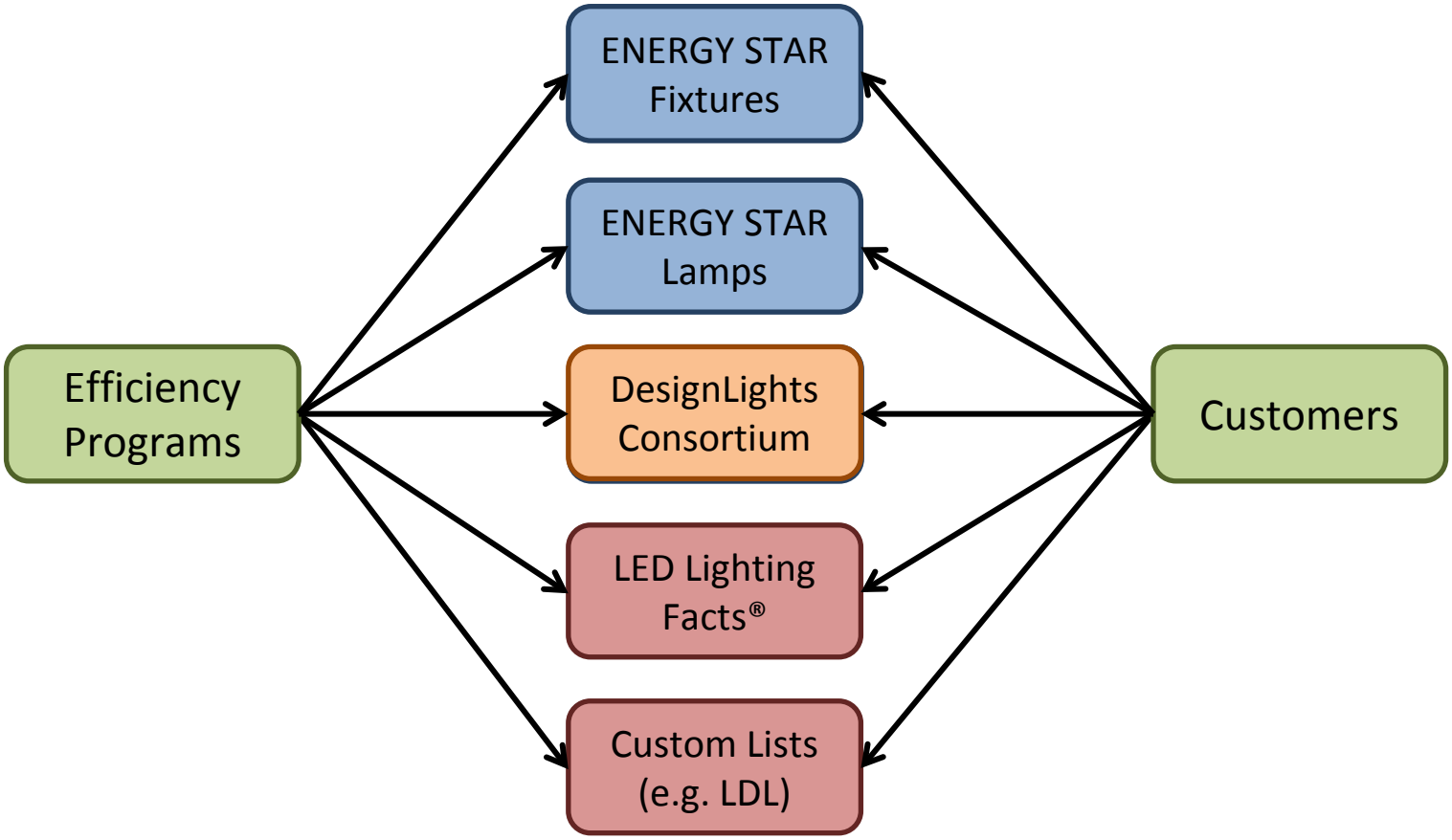
Qualified Products List Confusion



Qualified Products List Confusion

Customers are overwhelmed

- Negative first experience with LED

Partners are bewildered and uncertain

- Leads to sales of unqualified products

Efficiency program staff required to reference multiple lists

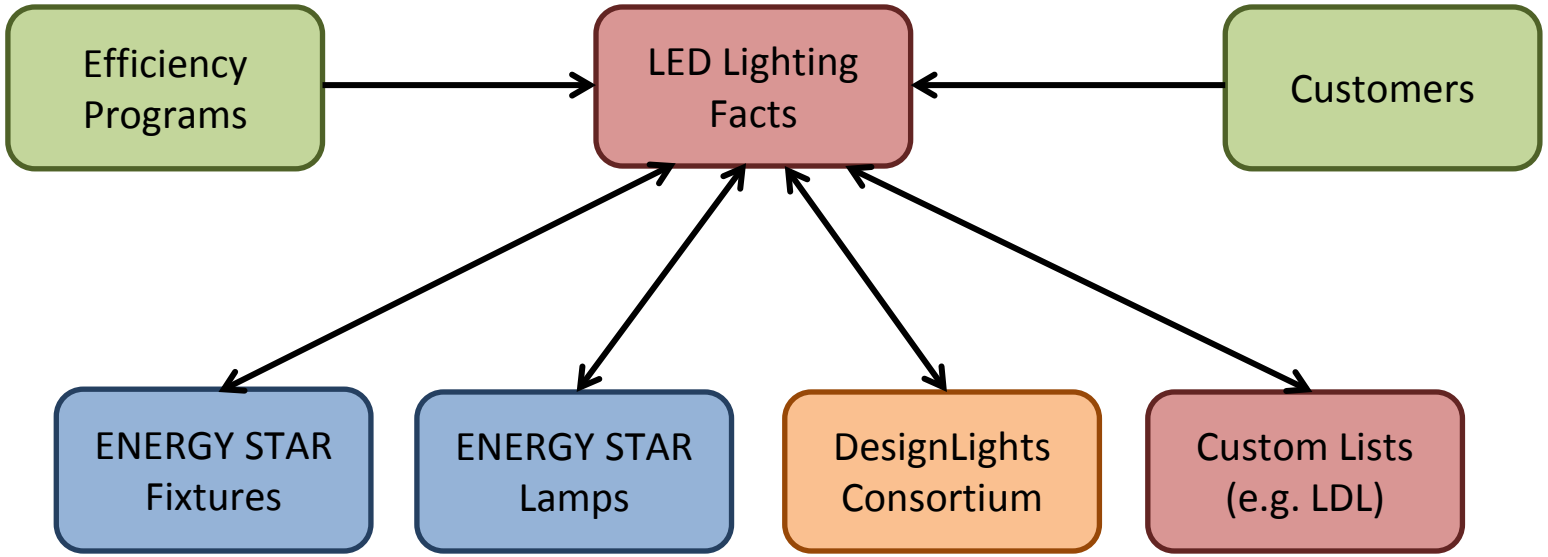
- Wasted time and resources

Qualified Product List *Clarity*

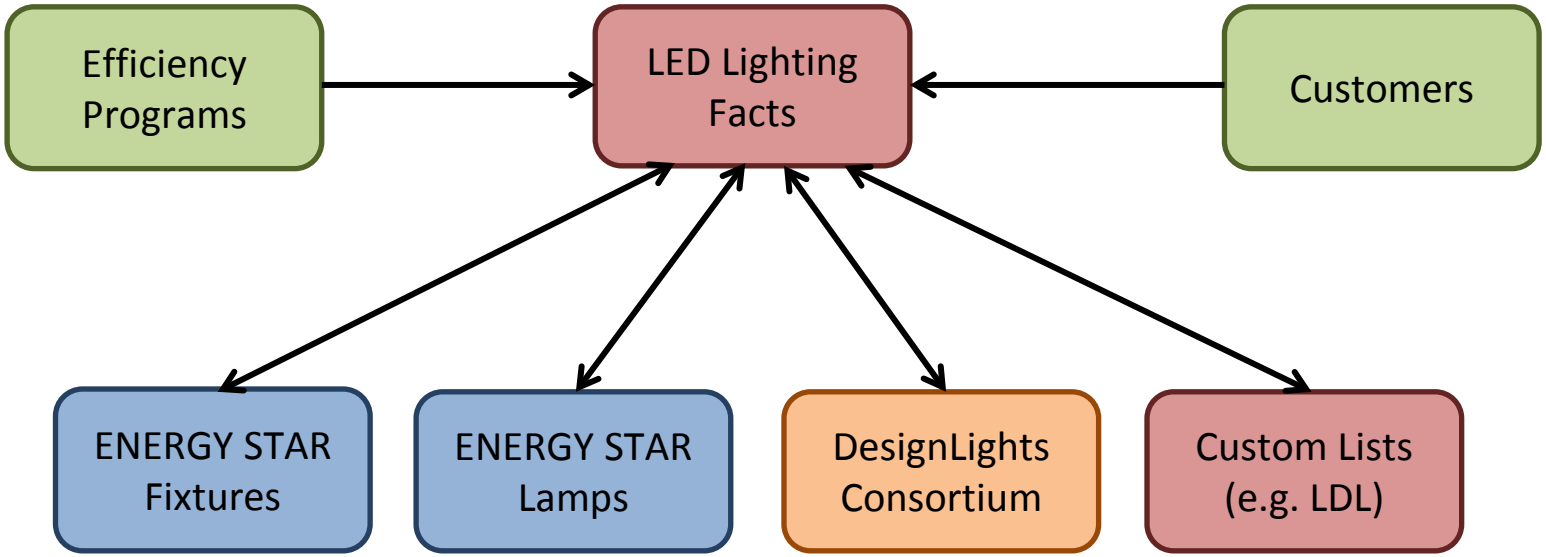
Simple and **streamlined** for programs, partners, and customers.

One list, easily searchable, **predictable format.**

Maintain role of qualification agencies.



Qualified Product List *Clarity*



How?

- Federal effort (DOE)
- Consortium (utility / manufacturer / both)
- Privately developed (fee-based use)

LED Program Challenges

1. Product Qualification
2. Qualified Product List Confusion
3. **Regulatory Compliance**

Regulatory Compliance

What is a cost-effectiveness test?

- Evaluates the **lifetime** value of an investment to ensure that the **collective <u>societal</u> benefit** outweighs the **cost**

- Analysis may consider:

Installation Cost	Maintenance Costs	Watts Saved	Operating Hours
Measure Lifetime	Transmission Losses	Interactive Effects	Discount Rates

Different names:

Total resource cost **(TRC)** test

Benefit-cost **(BC)** analysis

Net societal benefit

Screening

Regulatory Compliance

Examples using Efficiency Vermont's cost-effectiveness screening tool

ENERGY STAR A lamp	9W LED vs. 40W inc. $40 *installed* cost	**PASSES SCREENING** Measure life 8.3 years 1.6 year payback (w/ rebate)
ENERGY STAR A lamp **proposed 10,000 hr life**	Same as above, with 10,000 hour life	**DOES NOT PASS SCREENING** Measure life reduced to 3.3 years 1.6 year payback (w/ rebate)
~~DLC LED linear tube vs. T12~~	~~24W LED vs. F34T12~~ ~~$75 each *installed*~~	~~**PASSES SCREENING**~~ ~~12.7 year payback (no rebate)~~
DLC LED linear tube **vs. T8**	24W LED vs. F32T8 $75 each *installed*	**DOES NOT PASS SCREENING** 40 year payback (no rebate)

Regulatory Compliance

Why cost-effectiveness tests?

- Most programs are funded by ratepayers
- State regulators want to ensure that these public funds are being used for beneficial projects

Challenges related to LED

- Determining an appropriate **baseline**
  (existing equipment might be irrelevant)
- Setting an accurate **performance level**
- Identifying an appropriate measure **lifetime**
- Predicting **future** product and maintenance **costs**

Regulatory Compliance

Regulator negotiation

- Process can take 6-12 months from proposal to implementation

- Once approved and implemented, assumptions might be out of date

Regulatory Compliance

What would be helpful?

- Accurate cost & performance **forecasts by category**
- **Higher** minimum DLC / ENERGY STAR **performance requirements** (relative to market capability)
- Support for **longer lifetime** requirements

Questions?

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