

# Committee on Energy Resources and the Environment

# What If We Build It and They Don't Come?

February 10, 2020

## In Pursuit of Beneficial Electrification

**E Source** 

#### Bill LeBlanc, Chief Instigation Agent E Source

NARUC Winter Meeting

February 10, 2020

# What has happened in just 3 years

Renewable-energy and emissions-reduction goals have skyrocketed.

Renewable energy costs have plummeted.



Electrification now has far different implications.



# **Rapid decrease in costs of wind/solar**

#### Levelized Cost of Electricity By Source



WIND: Costs 67% less compared to 2010

SOLAR: Amazing 83% less cost compared to 2010

NATURAL GAS: 37% lower costs compared to 2010

COAL: Smallest change, at only 8% lower costs.

Source: EIA & Lazard

https://towardsdatascience.com/the-evolution-of-the-us-electric-grid-f18bce6473d5

## What are we trying to achieve with electrification?

## Decarbonizing and improving environments



Optimizing the electric grid and reduce electric rates



Reducing overall energy costs for consumers, including non-participants

# A commitment to equity

A new report, Equitable Building Electrification: A Framework for Powering Resilient Communities, highlights the benefits for low-income residents. Building electrification can have significant benefits for lowincome communities.

The report was produced in partnership between The Greenlining Institute and California's Energy Efficiency for All coalition.

## **Energy utilities are unique stakeholders**

3014













Commons.wikimedia.com

## **Cities and communities are taking action\***







- 455 cities support climate goals,
- Over 100 have committed to 100% renewable power or carbon neutrality

\*as of 10/15/18

# The electrification framework

**Getting to yes ... use the same terminology** 



## **Defining beneficial electrification**

Environmentally beneficial electrification

Grid-efficient electrification

Economically efficient electrification

## **Environmentally beneficial electrification**

When the new, electrified end use has less of a negative environmental effect than the prior use. It's implied that cost isn't a defining element of this equation.

Note: Each jurisdiction defines what environmental effects to address and how to value them.

## **Economically efficient electrification**

When the new, electrified end use costs less to produce and consume with the same or better outcome for the end user.

Example: Life cycle costs of keeping a home comfortable in the heating season have a lower cost with the electrified option compared to the prior option.

## **Grid-efficient electrification**

When the new, electrified end use creates electric production which delivers overall MWhs for less money than if that option had not been taken. This also provides downward pressure on rates, on a relative basis.

Example: An electric vehicle charges in a manner that does not cause additional infrastructure costs, and improves system load factors.

## **Defining beneficial electrification**



# Learning about Electrification through the DSM Lens

## **Typical DSM Program Cycle**



## **A Twist on Cost Effectiveness Tests**

Creating a cost-effectiveness test for beneficial electrification helps us optimally allocate our resources by rigorously comparing the costs and benefits related to each sector of our beneficialelectrification framework.

## **Key principles for an electrification cost-effectiveness test**

- Values electrification as one of many resources
- Reflects policy goals on carbon, rates, reliability
- Takes into account all relevant impacts
- Is forward-looking, taking full measure life into account
- Is transparent

Adapted from National Standard Practice Manual

## **Testing for cost effectiveness**

#### **Total Resource Cost Test Benefits**

-Customer gasoline savings

-Customer maintenance savings



#### **TRC Costs**

- -Program admin costs
- -Utility system upgrades
- -Utility electricity purchases
- -Customer electricity costs
- -Customer net measure cost

## **Testing for cost effectiveness**

#### **TRC Benefits**

-Customer gasoline savings

-Customer maintenance savings

#### **BE Test Benefits**

Avoided emissionsHealth benefitsEcon gains



# Regulatory incentives for beneficial electrification

Rr 27%

## Why Should Electrification Programs Receive Regulatory Incentives?

- Well-designed and executed electrification can bring large-scale benefits to customers and society.
- Utilities are uniquely positioned to execute beneficial electrification programs.
- Utilities, especially those with decoupling, may not have a [strong enough] financial incentive for electrification
- Oversight will ensure programs are cost-effective and are achieving stated goals
- Environmental urgency should drive specific goal-based actions in electrification, which would be accelerated with incentives.



# **Electrification Benefits Matrix**

#### Consumers

- Lower bills
- Lower rates
- Savings leads to spending \$
- Non-participant benefits
- Health benefits

#### **Environment**

- Carbon reduction
- Local air pollution improvements
- Reduction in health problems and costs

#### Grid

- Built in battery storage in EVs
- Opportunity to expand pricing options, smart meter benefits
- Load factor improvements
- Allow more renewables on grid

## **Beneficial-electrification incentive maturity**



XX

# Transportation Electrification

Rr 27%

## What's the electrification potential?

Source: NREL, Electrification Futures Study



## **NREL electrification model: EVs dominate**

Vehicle electrification dominates incremental growth in **annual** consumption



Source: National Renewable Energy Laboratory

## **Sales of the top 8 EV models**



"Do not count on the OEMs [car companies] to promote electric vehicles. Utilities must play that role for them to succeed."

Nigel Zeid, Top Nissan Leaf sales agent nationally, recent E Source presentation

## **EV success is not a guarantee**

Society will benefit when more EVs are on the road more quickly.

Utilities are in a great position to accelerate adoption.



Source: "Crossing the Chasm," Geoffrey Moore

# **Accelerating the adoption curve**

Goal: Get to the early majority 3 to 5 years sooner in your service territory.



## Valuable Role That Utilities Can Play



#### Understand buyers:

- Ethnographic research
- Quantitative research
- ID next set of buyers
- Create segments
- ID hot buttons, barriers



Motivate buyers:

- Advise about EVs
- Promote Benefits of EVs
- Tie to new technology, convenience, fun
- Connect to utility brand
- Social media
- Direct email

## Create buyer experience:

Bulk buy/lower \$

FOR SALE

- Ride and drives
- Workplace, fairs, sporting events
- Train salespeople
- Overcome barriers, fears
- Onboarding, understand rates, charging



## Enhance driver experience:

- Home charging
- Off-peak rates
- Billing/benefits
- Work charging
- Public charging
- Engage through social media
- Rewards

# Putting electrification into play

## **Creating a Strategy and Roadmap**



## **For more information**



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Role of Third Party Providers in the Push for Electrification

## Winter NARUC Policy Summit

Marc Monbouquette Enel X e-Mobility

February 10, 2020



## Enel X Portfolio

Providing flexible resources across business lines

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e-Industries	e-City	e-Home	e-Mobility
Consulting & auditing services	Smart lighting	Installation & repair services	Charging infrastructure
Distributed generation on/off site	Fiber optic wholesale network	Automated home management	Maintenance and other services
Energy efficiency	Distributed gen. & energy services	Financial services	OEM back-end integration
Demand response & storage solutions	Demand response & storage solutions	Home 2 Grid	Vehicle Grid Integration

## FLEXIBLE RESOURCES

enelx



### **Utility Investment Models**

Different approaches to invest in EV charging infrastructure & equipment



Source: Union of Concerned Scientists (2019)

enelx

## 34+ U.S. utility partners

Enabling utilities with best-in-class IoT & smart charging solutions









- 3P technology providers play an important role in achieving beneficial electrification (BE) through program design, implementation, and execution
- BE depends on customers being exposed and responding to incentives to shift incremental loads to off-peak or beneficial hours to increase utilization
  - Time-varying rates or direct device control
  - 3Ps can pass through price signals or control devices to realize this



## thank you! marc.monbouquette@enel.com



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## Beneficial Electrification: What If We Build It and They Don't Come

NARUC – Committee on Energy Resources and the Environment

February 10, 2020

Chris Budzynski – Director, Utility Policy



#### **Benefits of Electrification Across Sectors are Significant**







#### **Exelon**

- Grid
- Strategic Alignment
- Reputational
- Growth
  Opportunities

#### Society

- Environmental
- Public Health
- Equity

#### **Customers**

- Economic and Efficiency
- Sustainability
- Workforce



#### What Makes Electrification Beneficial?

According to the Regulatory Assistance Project for electrification to be beneficial it must meet one or more of the following conditions without adversely affecting the other two<sup>1</sup>:



Saves consumers money over the long term



**Enables better grid management** 



**Reduces negative environmental impacts** 

#### Transportation sector represents a unique and significant opportunity from a beneficial electrification perspective

<sup>1</sup>Farnsworth, D., Shipley, J., Lazar, J., and Seidman, N. (2018, June). Beneficial electrification: Ensuring electrification in the public interest. Montpelier, VT: Regulatory Assistance Project.



#### **EV Program Design – Approach to Maximize Benefits & Mitigate Risk**

- Collaborative Stakeholder Process
- Establish Role of Utility
- Diversified Portfolio of Options
  - Infrastructure
  - Rate Design
  - Customer Education
  - Social Equity
- Innovative Solutions
- Measurement and Validation
- Keeping Pace with Technology













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