



NEEP Strategic Electrification Project
Resource Catalogue
Updated August 2018

Organization and Resource Link	Synopsis
RAP webinar: Beneficial Electrification: Ensuring Electrification in the Public Interest (June 2018)	This RAP webinar outlines principles regulators can follow to ensure that electrification initiatives benefit customers, grid management, and the environment.
NESCAUM: Multi-State ZEV Action Plan – 2018 Update (June 2018)	This new action plan is intended to propel rapid adoption of the cleanest passenger cars on the road today, including battery-electric, plug-in hybrid electric, and fuel cell electric vehicles. It focuses on accelerating ZEV adoption by mainstream consumers. The Plan was developed by nine states (New Jersey joined in 2018) and addresses priorities for action through 2021.
National Grid: Northeast 80x50 Pathway (June 2018)	This paper presents National Grid’s integrated blueprint for New York and New England to reduce greenhouse gas emissions deeply below 1990 levels while supporting economic growth and maintaining affordability and customer choice.
NEEP: Action Plan to Accelerate Strategic Electrification in the Northeast (March 2018)	Regional Action Plan and recommended research to accelerate long-term market transformation for strategic electrification to displace the use of carbon intensive fuels with a focus on thermal renewable solutions coupled with deep efficiency and grid integration for home and building heating, and the advancement of electric vehicles.
RMI: The Economics of Electrifying Buildings (2018)	This report analyzes the economics and carbon impacts of electrifying residential space and water heating both with and without demand flexibility—the ability to shift energy consumption in time to support grid needs. It compares electric space and water heating to fossil-fueled space and water heating for both new construction and home retrofits under various electric rate structures in four cities.
NEEP: Northeastern Regional Assessment of Strategic Electrification (July 2017) and Blog: Driving Electrification	Regional analysis of the important role of electrification of fossil fuel use to achieve state and regional greenhouse gas emission reduction goals 80% by 2050. Developed with the assistance of Synapse Energy Economics and Meister Consulting Group.



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<p>NEEP: Regional cold climate Air Source Heat Pump Market Transformation Initiative, Strategy, 2017 Regional ASHP Workshop Summary: It Takes a Village; Product Specification and List and Best Practice ccASHP Installer Resources</p>	<p>Growing multi-year regional project involving over 200 stakeholders – manufacturers, state energy offices, efficiency programs and advocates from northeast states and Eastern Canadian Provinces to speed the introduction and broad market adoption of quality, efficient cold climate ASHPs to displace carbon intensive heating fuels.</p>
<p>LBNI: Electrification of buildings and industry in the United States; Drivers, barriers, prospects, and policy approaches (March 2018)</p>	<p>This study reviews the possible benefits and barriers to greater electrification in U.S. buildings and industry, the technical and economic potential for electrification, and policy and programmatic approaches for regions that may want to explore beneficial electrification.</p>
<p>RAP webinar: Beneficial Electrification: What's Hot, and What's Not (March 2018)</p>	<p>Discussion of criteria to assess whether electrification is “beneficial” and how to quantify the energy, environmental, and consumer benefits of electrification.</p>
<p>EPRI: A Preview of the U.S. National Electrification Assessment (February 2018)</p>	<p>This document frames the discussion of the pivotal role efficient electrification, including analysis, creation of an electrification technology pipeline, and expansion of R&D collaborations, will play in the future energy system.</p>
<p>VEIC: Driving the Heat Pump Market: Lessons Learned from the Northeast (February 2018)</p>	<p>This report reviews the policy, regulatory, and program frameworks in Northeast states – New England plus New York – to identify the key factors driving program success and overcoming barriers to ASHP adoption.</p>
<p>NREL: Electrification Futures Study: A Technical Evaluation of the Impacts of an Electrified U.S. Energy System (December 2017)</p>	<p>NREL’s Electrification Futures Study team published the first in a series of reports. This report provides estimated cost and performance data for electric technologies and applies a literature and expert opinion approach for future projections of technology advancements</p>
<p>CERES: Accelerating Investment in Electric Vehicle Charging Infrastructure (November 2017)</p>	<p>This analysis evaluates the total need for electric vehicle charging infrastructure—including private chargers at vehicle owners’ homes and publicly accessible chargers—to accommodate plug-in electric vehicles (PEV) in the twelve largest utility service territories in the states of California, Georgia, Maryland, Massachusetts, New York, Ohio, and Pennsylvania.</p>
<p>NRDC: America’s Clean Energy Frontier: The Pathway to a Safer Climate Future (September 2017)</p>	<p>NRDC’s groundbreaking analysis demonstrates clearly that with bold action on energy efficiency, renewable energy, electrification of vehicles and buildings with clean power, and electric grid enhancements, the United States can reach its 80 percent by 2050 climate goal.</p>



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US DOE: Quadrennial Energy Review: Transforming the National Electricity System : (January 2017)	Section detailing necessity of electrifying non-electric end uses in buildings, industry, and transportation (Chapter 2, p 28-32).
The Brattle Group: Electrification Emerging Opportunities for Utility Growth (January 2017)	The Brattle whitepaper provides an alternative paradigm for the U.S. utility industry where electricity sales break out of the often-cited “utility death spiral” through beneficial electrification.
RAP: Beneficial Electrification: Opportunity Knocks for Utilities (January 2017)	Most recent in a series of articles authored by RAP’s Ken Colburn on the benefits of strategic electrification. (related webinar available here)
RAP/NRECA: Environmentally Beneficial Electrification: The Dawn of Emissions Efficiency (August 2016)	Coins the term “Emiciency” to indicate the importance of emissions efficiency going forward.
Bloomberg New Energy Finance: Ten Predictions for 2017 (January 2017)	Mentions electrification as an underlying trend toward further integration of renewables on the grid.
Benefits of Port Electrification: (ICF on behalf of EPA- December 2016)	Highlights benefits of electrifying machinery and other fossil-intensive end uses at our nation’s ports.
MJ Bradley and Associates: Power Switch: The Future of the Electric Power System in the Northeast and the Disruptive Power of Innovation (October 2016)	Cites Northeast states’ commitment to emission reduction and notes that electrification strategies will be required to satisfy such commitments.
VOX: The Key to Tackling Climate Change: Electrify Everything (September 2016)	Discusses electrification and outlines several prominent resources on the subject from respected sources: <ul style="list-style-type: none"> • Environmental and Energy Economics (E3) • Mark Jacobson and colleagues at Stanford University • The UN Sustainable Development Solutions Network’s Deep Decarbonization Pathways Project • The California Council of Science and Technology • Jeffrey Sachs and Johan Rockström of Columbia University and Stockholm University respectively
SWEEP: How Leading Utilities are Embracing Electric vehicles (February 2016)	Provides detailed analysis of how electric vehicles may impact the electric grid in the Southwest.
NW Energy Coalition: Building Good Load to Reduce Carbon Emissions: Getting Northwest Utilities More Involved in Widespread Transportation Electrification (January 2016)	Provides detailed analysis of benefits and costs associated with transportation sector electrification in the Northwest.



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Fraunhofer: What Will the Energy Transformation cost: Pathways for Transforming the German Energy System by 2050 (November 2015)	Identifies electrification of transportation as a key variable in moving Germany toward a clean energy grid.
Keith Dennis: “ Environmentally Beneficial Electrification: Electricity as the End-Use Option ” (November 2015)	Proposes applying a systems approach to end use efficiency (et al.)
Acadia Center: EnergyVision2030 (February 2014)	Identifies electrification as a priority in the shift towards a cleaner energy system.
NESCAUM: Zero Emission Vehicle Action Plan (May 2014)	Outlines steps forward for promotion of zero emission vehicles and ultimately transportation electrification.
LBNL’s Scenarios for Meeting California’s 2050 Climate Goals: Volume I, Non-Electricity Sectors and Overall Scenario Results (September 2013)	Provides technical analysis identifying widespread electrification of passenger vehicles, building heating, and industry heating as a requirement of meeting California’s 2050 emission reduction goal of 80%.



Public Policy Proceedings/Dockets	Summary
<p>NY PSC Docket 17-G-0606: Consolidated Edison Smart Solutions for Natural Gas Customers Program (August 2018)</p>	<ul style="list-style-type: none"> • NY PSC approved ConEd \$5 million demand response program to reduce natural gas use during peak periods using smart thermostats and peak-shaving programs for commercial and industrial customers as non-pipeline solution to avoid new pipeline infrastructure.
<p>Massachusetts: Chapter 227 of the Acts of 2018: An Act to Advance Clean Energy - signed into law 8/9/2018</p>	<ul style="list-style-type: none"> • Expands statewide 3-year utility energy efficiency plan to include energy storage, renewable energy sources, and strategic electrification that result in cost-effective GHG emission reductions even if the measures increase overall electricity consumption. • Eases cost-effectiveness test by broadening the definition of benefits and applies cost-effectiveness screening at the sector level, instead of the level of individual programs. • Creates new Clean Peak portfolio standard for retail electricity suppliers to encourage additional clean resources to meet peak demand and other energy system needs. Includes Class I and II RPS resources, energy storage systems charged by renewables, and demand response resources. • Requires electric utilities to file annual resiliency reports for local distribution systems to show (i) electric load, particularly during peak time periods, (ii) the most congested and constrained areas of the distribution grid, and (iii) assets vulnerable to outages. Plus other provisions re: RPS standards, etc.
<p>Washington D.C. – Clean Energy Omnibus Act of 2018 – introduced June 2018, pending approval</p>	<p>Introduced by Councilmember Mary Cheh the legislation would establish the nation’s most aggressive renewable portfolio standard and first-of-its-kind mandatory building energy performance standard program for large and new buildings:</p> <ul style="list-style-type: none"> • 100 percent clean, renewable electricity by 2032 • Increased fees on fossil fuels, while exempting renewables. Funds dedicated to low-income, energy efficiency and thermal efficiency • Existing Commercial Building performance standards will drive efficiency retrofits. Beginning in 2020, all privately owned buildings 50,000+ square feet and all District owners of 10,000 + square feet shall be no lower than the District median ENERGY STAR score for each property type. By 2026, all privately-owned buildings of at least 10,000 square feet will be included in the program. Buildings have 5 years to achieve compliance. • Vehicle excise tax amount dependent upon fuel efficiency
<p>Connecticut’s Comprehensive Energy Strategy (February 2018)</p>	<p>The 2018 update identifies strategic electrification, grid modernization, increasing efficiency, and improving reliability and security are key to guide CT toward a cheaper, cleaner, and more reliable energy system. NEEP comments</p>



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Connecticut’s 2018 Integrated Resource Plan	The scope of the Integrated Resource Plan includes beneficial electrification. NEEP submitted comments on the scope in July 2018. The draft IRP will be released in September 2018
New Efficiency, New York Plan , this plan follows the Governor’s announcement of a new energy savings target	This report recommends a comprehensive mix of strategies to NYSERDA and DPS that pursue energy efficiency improvements to meet an ambitious new target of 185 trillion Btus (British thermal units) of end-use energy savings below the 2025 energy-use forecast. Beneficial electrification is highlighted throughout the
Rhode Island Power System Transformation Initiative (2017)	This initiative aims to design a new regulatory framework for Rhode Island’s electric system. This includes five work streams: utility business model, grid connectivity, distributed system planning, beneficial electrification, and video archive. Phase One Report (November 2017)
Massachusetts Order Establishing Eversource’s Revenue Requirement (November 2017)	Approval of Eversource’s rate case for a \$45 million EV infrastructure program to increase the availability of charging stations and lower the barriers to EV adoption in the state.
Rhode Island Greenhouse Gas Emissions Reduction Plan (December 2016)	Electrification of transportation and building heating identified as key emission reduction strategy.
Systems Integration Rhode Island Vision Document (OER/RAP/et al.- January 2016)	Analysis and possible pursuit of strategic electrification is one of the document’s six major recommendations.
New York PSC Order Adopting Ratemaking and Utility Revenue Model Policy Framework (May 2016)	Groundbreaking decision that suggests the utilities should plan for and facilitate electrification of transportation and home heating sectors to reduce emissions, raise the load factor of the electric grid, and reduce consumer costs (p. 90). For further details, see first section of this NEEP Blog. Summary of the order and its requirements/deadlines
New York PSC’s Notice of Technical Conference for Development of Thermal Renewable Energy Credits in Compliance with Clean Energy Standard (January 2017)	The New York Public Service Commission will provide for a thermal renewable energy credit carve out under their Clean Energy Standard.



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Vermont Renewable Energy Standard – Tier III Renewable Thermal – July 2015	Requires Vermont’s regulated distribution utilities (DUs) to either procure additional new distributed renewable energy consistent with the requirements of Tier II, or acquire fossil-fuel savings through energy transformation projects that reduce their customers’ fossil-fuel consumption and associated greenhouse gas emissions. Under Tier III, DUs must procure either the amount of distributed renewable energy or fossil-fuel savings equivalent to 2% of their annual retail sales in 2017, increasing by two-thirds of a percent each year until reaching 12% in 2032.
Vermont 2016 Comprehensive Energy Plan (February 2016)	Outlines a statewide strategy and extensively analyzes implications of a shift away from fossil fuel- based end uses. For detailed explanation of policy framework, see this NEEP Blog .
Colorado Docket 17I-0692E, Investigation Of Electrification Of Transpiration	On November 16, 2017, the Colorado Public Utilities Commission (PUC) opened this proceeding to investigate electrification of the transportation sector. The Commission would like to examine: near-term and long-term challenges for transportation electrification, new technologies such as vehicle-to-grid (V2G), heavy duty electric vehicles (EVs), as well as other beneficial electrification such as water heating and space heating and cooling.

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