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Electrification Futures Study - Scenarios of Electric Technology Adoption in Power Consumption for the United States: National Renewable Energy Laboratory/July 2018

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The National Renewable Energy Laboratory (“NREL”) released a July 2018 study titled:

Electrification Futures Study: Scenarios of Electric Technology Adoption in Power Consumption for the United States (“Study”)

The Study’s objective is stated to include the development of an integrated analysis of how the potential for electrification might impact the demand side in all major sectors of the United States energy system, which include:

- Transportation
- Residential
- Commercial buildings
- Industry

The term electrification describes the shift from any non-electric source of energy to electricity at the point of final consumption. This is deemed a major emerging trend in world energy markets. Further, the trend is stated to consist of what are described as “newly-improved electric end-use technologies, engaged consumers and manufacturers, and a variety of policy objectives in different jurisdictions.” “Electrification” is deemed to have the potential to significantly affect actors across the entire landscape.

Key findings from the Study include:

- The scale of electrification can be informed by the context of historical energy transformations
- The transportation sector experiences the greatest technology transition toward electric vehicles in the scenarios from the Study
- The buildings and industrial sectors generally see less potential for transformational change nationwide, but electrification in these sectors could acutely affect certain regions and end uses
- Electrification has the potential to significantly increase overall demand for electricity, although even in the Highest scenario, compound annual electricity consumption growth rates are below long-term historical growth rates

- In addition to growth in annual electricity consumption – driven to a large degree by greater adoption of plug-in electric vehicles – electrification has the potential to significantly load shapes, particularly due to increased reliance on electric heat pumps for space and water heating needs
- Widespread end-use electric technology adoption would result in substantial shifts in fuel, electricity, and total energy consumption

The Study includes several “follow-on” activities that are stated to potentially add further value to the understanding of electrification potential, challenges, and its impacts.

A [copy of the Study](#) can be found here.