Massachusetts Executive Office of Energy and Environmental Affairs

Enabling Data-Driven Energy and Transportation Planning

Case Study

The rapid electrification of transportation is central to Massachusetts' strategy for achieving its goals. The state has set targets for 2.4 million light-duty electric vehicles (EVs) and significant electrification of medium- and heavy-duty vehicles by 2035. Meeting these goals demands an EV-charging network that supports growth and limits grid stress. To guide this effort, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) created the Electric Vehicle Infrastructure Coordinating Council (EVICC). EVICC runs ongoing assessments that forecast infrastructure needs and shape policy and investment.

Partnering with Synapse Energy Economics and the Center for Sustainable Energy, RSG applied advanced modeling and geospatial analysis to locate charging demand and gauge grid impacts. The team paired travel-behavior insights with data-driven forecasting. This combination delivered clear guidance for energy-sector planning and helped speed the shift to cleaner transportation.

The Challenge

Massachusetts' transportation electrification goals require not just faster EV adoption but also a charging network that keeps pace in both scale and location. Building this network means more than adding chargers. It requires data-driven insight into how changing travel patterns, land use, and vehicle ownership will shape future needs.

Policymakers faced key questions: Where will chargers be needed most? What types will be required? How should investments prioritize communities with limited home charging? And how will surging demand affect the electric grid?

To answer these questions, EEA and EVICC launched a second statewide EV-infrastructure assessment. The study set three goals. It would forecast charging demand through 2035 for all vehicle classes, highlight priority areas, and test grid impacts under several charging-management scenarios. Achieving those goals required integrated models that linked transportation trends, demographics, land use, vehicle sales, housing data, and grid capacity. This second phase built on a successful first phase that mapped charger locations to meet projected housing and travel demand.

RSG's Solution

RSG provided the technical foundation for Massachusetts in both EVICC assessments. Drawing on our transportation systems modeling expertise, RSG led the development of key analytical components that enabled the state to forecast charging needs with unprecedented spatial detail.

In the first phase, RSG modeled long-distance light-duty EV charging demand. Using vehicle telemetry data and a custom charging behavior model, RSG simulated where EVs would likely recharge during long trips. This went beyond simple traffic counts, identifying optimal highway-adjacent sites for DC fast chargers based on projected state-of-charge depletion and seasonal travel patterns across all highways.

In the second phase, RSG projected multifamily housing growth and off-street parking supply, two major drivers of public charging. Parcel data, land-use layers, and municipal parking inventories fed a regression model that estimated parking availability statewide. The team mapped results to a one-kilometer hex-grid, spotlighting urban blocks where public Level 2 and DC fast charging are most urgent.

The final component addressed charging demand for medium- and heavy-duty vehicles. RSG used the Massachusetts statewide travel demand model (TDM23) to forecast vehicle miles traveled for both light- and heavy-duty vehicles. These data were processed and interpolated to generate interim-year estimates for 2030 and 2035. This informed where charging for long-distance truck travel would be concentrated.

These analyses supported core findings, showing that by 2035 Massachusetts will need about 1.5 million charger ports statewide. This includes over 150,000 workplace/public ports for light-duty vehicles and about 19,000 for medium- and heavy-duty vehicles. More than 90% of chargers for light-duty vehicles will be private residential units.

RSG's work also pinpointed geographic priorities. Dense urban centers like Boston, Worcester, Lowell, and Springfield will need concentrated Level 2 public charging. Major highways will require substantial DC fast charging to support long trips.

By delivering detailed, spatially resolved forecasts, RSG equipped policymakers and utility planners with insights to guide strategic transportation planning decisions. This work advances Massachusetts' transportation electrification goals and shows how advanced modeling can bridge transportation and energy planning to enable a more sustainable future.

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