

Unprecedented Analysis of LA's Clean Energy Transformation

Jurisdictions like the City of Los Angeles are boldly establishing ambitious energy objectives—and NREL can be a key partner in informing these transitions.

The City of Los Angeles is one of several U.S. local governments setting monumental, measurable goals to transform their energy economies. At the direction of its City Council, LA has embarked on a plan to modernize its electricity system infrastructure—aiming for a 100% renewable energy supply by 2045, along with aggressive electrification targets for buildings and vehicles.

But with great ambition comes great need for actionable data and analysis. To meet this need, NREL is providing rigorous and integrated engineering-economic modeling to the Los Angeles Department of Water and Power (LADWP) through the **Los Angeles 100% Renewable Energy Study (LA100)**. LA100 joins a fleet of NREL efforts to empower state and local governments with credible, objective energy analysis, exemplifying the lab's mission to transform our nation's energy system through transferring knowledge and innovation.

A First-Of-Its-Kind Study

While other studies have analyzed specific aspects of the 100% renewable energy puzzle, LA100 is the most comprehensive, detailed analysis to date of an entirely renewable-based electric grid as complex as LA's power system. Through uniquely detailed, large-scale modeling and analysis, NREL is evaluating a range of future scenarios to equip LA decision makers to answer these questions:

- What are the **pathways and costs** to achieve a 100% renewable electricity supply while electrifying key end uses and maintaining the current high degree of reliability?
- What is the **impact** on the environment?
- How might the **economy** respond to such a change?
- How can **environmental justice communities** be part of the solution?

"What excites me most about the 100% renewable energy study we are partnering with NREL on is its unprecedented nature. We don't like to shy away from challenges, and neither does NREL."

*- Lauren Faber O'Connor
Chief Sustainability Officer for the City of Los Angeles*

Our Integrated, Objective Approach

LA100 presents an analytical undertaking of unprecedented scale and complexity. The real-world impact of approaching 100% renewables cannot be analyzed using just one method or model; LA100 requires a new approach. Uniquely integrating diverse capabilities across the lab—including detailed electricity demand modeling, economic impact analysis, distribution grid modeling, and life-cycle greenhouse gas analysis—LA100 taps into NREL's wide scope of expertise to leverage NREL's high-performance computer to:

- Run millions of simulations of thousands of **buildings** to examine how adoption of new design elements, equipment, or appliances could change how much and when people use electricity
- Explore opportunities to **electrify different transportation modes** and assess when and where people might charge electric vehicles
- Use sophisticated aerial scans and customer adoption models for each and every roof in LA to see how much **rooftop solar** could be installed



- Apply state-of-the-art **utility planning** tools at unprecedented scale to examine costs and benefits of a wide range of technologies, including photovoltaics, wind, concentrating solar power, geothermal, biomass, nuclear, battery/pumped-hydro/hydrogen storage, and demand response
- Perform detailed analysis of site-specific data for both the **distribution** and **transmission network** to ensure new resources won't overload lines
- Simulate how different technologies could be used to **ensure demand is met** even when the sun doesn't shine.

academia, city government, and more, this group reflects distinct perspectives and feedback necessary to enable an economic and equitable energy transition for LA. These discussions further tailor NREL's analysis to community needs, bridging the relationship between research and community concerns.

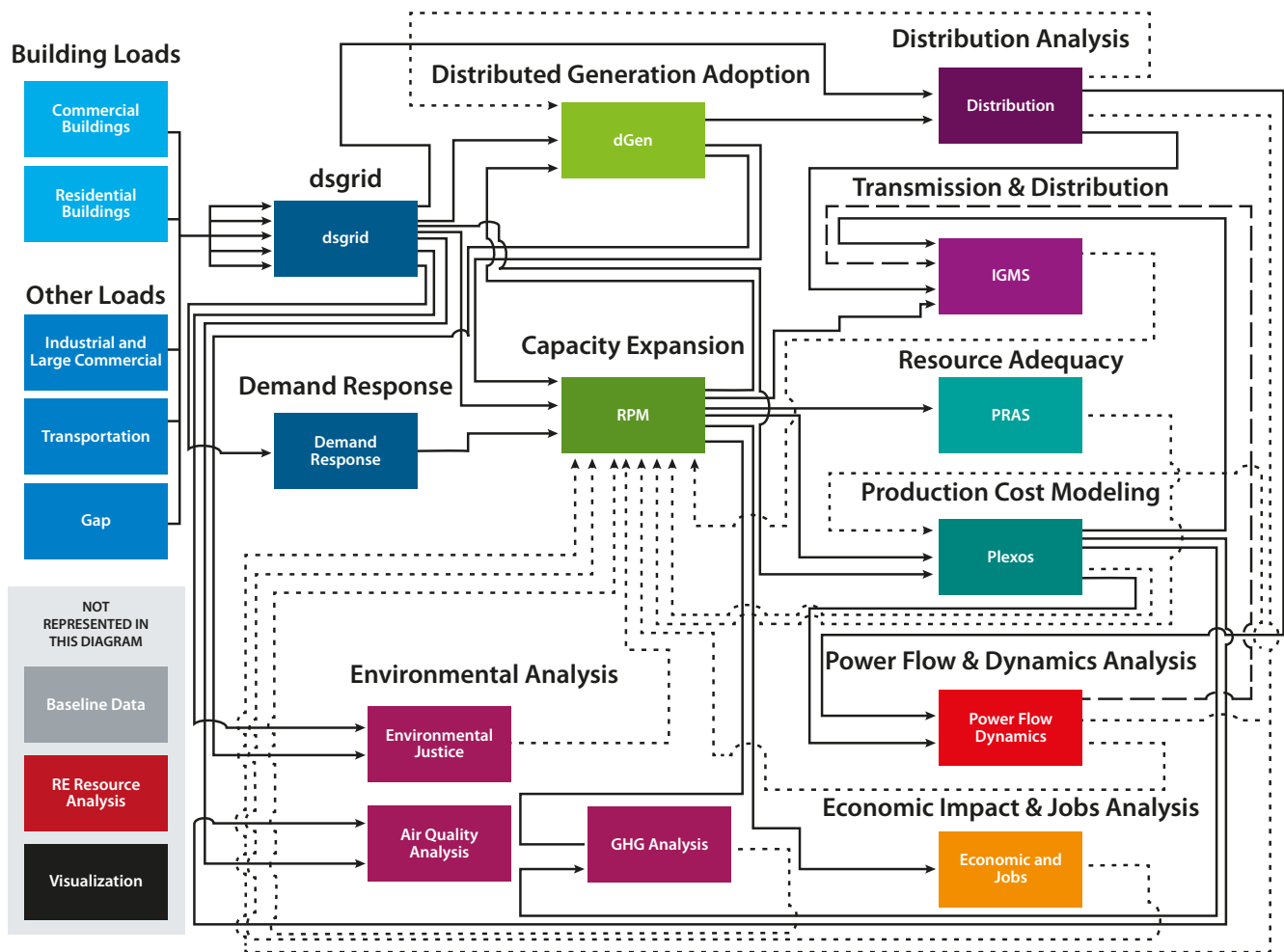
And this integrated approach is not limited to the modeling methodology. NREL is committed to supporting knowledge exchange with those who know LA best by collaborating with the LA100 Advisory Group. Comprising local stakeholders representing neighborhood councils, industry, key customers,



Working With Us

NREL is continually expanding its comprehensive, collaborative energy analysis at scale across a growing list of state, local, and tribal partners. Partners can leverage our unique capabilities—and the knowledge gained through the LA100 study—to inform their communities' energy visions.

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LA100 integrates a complex set of models to explore different approaches and their trade-offs on the path to a fully renewable power system.