

## Project Summary: Emerging Grid Objectives and Multi-Objective Decision Planning (MOD-Plan)

**Problem Statement:** The **traditional goal of electric grid planning is to maintain *safe, reliable, efficient, and affordable*** service for current and future customers. As social preferences and policies evolve, additional considerations are emerging, such as decarbonization, resilience, and energy equity. Clean energy goals, including *decarbonization*, are changing the resource mix and creating new requirements in the structure and function of the electric grid. The increasing frequency and severity of weather events over the last two decades, in addition to concerns over cybersecurity, have elevated *resilience* as a key planning objective. More recently, *energy equity* has emerged as an important consideration to ensure that disadvantaged populations are not adversely affected by grid modernization and have equal access to the benefits of it. Traditional planning frameworks must now address these **new planning goals of *decarbonization, resilience, and energy equity***, requiring new methods that need to be incorporated into current practices. In addition, a practical approach is needed to permit the formulation of balanced strategies for addressing the full set of goals which both complement and compete with each other. This project is focused on advancing such methodology to address this critical needed improvement in current planning processes.

**Project Goals:** The project has three goals: a) to develop a modeling framework that permits the application of multiple emerging objectives in electric grid planning processes, b) to advance practical methods for formulating planning objectives for decarbonization, resilience, and energy equity, and c) to report on metrics that can be used to measure the performance of grid systems with respect to these emerging objectives.

**Project Details:** We will consider the incremental and idealized improvements in grid planning paradigms, adaptation in state and federal regulatory jurisdictions, under blue and black sky conditions, with particular focus on resilience, equity, and decarbonization.

The initial work will create a baseline report on grid planning frameworks and energy infrastructure investment approaches for including these characteristics. Novel research will investigate the value of integration across planning seams, or to extend planning paradigms to capture desired outcomes. This work will be rooted in the reality of grid planning (traditional IDP and IRP), regulation, and investments, and engage a wide stakeholder community. We will advance the analytic methods, metrics, capabilities, and tools that lead to a better overall system planning process.

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- September 2021:** Establish stakeholder committee and preview project design, scope and draft report.
  - October 2021:** Baseline report on emerging grid planning objectives.
  - 2022:** Metrics to measure grid performance, case studies with partners for distribution planning multi-objective optimization, objective formulation.
  - 2023:** An idealized final framework for distribution system multi-objective planning that includes resilience, decarbonization, flexibility, and energy equity.

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