



# Integrated Renewable Energy

“For the current global electricity industry, grid modernization could mean investments to achieve more tightly coupled high voltage transmission systems spanning continents. And/or it could mean the advent and proliferation of local grids that balance local supply and demand, support local resiliency goals, and help strengthen local economies.”



## Grid Modernization for Clean Local Energy Resources

### IRESN's Mission

[IRESN](#) is a 501(c)(6) business league promoting renewable energy integration by facilitating purposeful collaboration between energy utilities and cities and counties.

### The Future of Energy Futures

Is the above image an icon of our preferred global energy future? A future requiring electrification? Yes.

A future requiring even greater reliance on high voltage grids? Not necessarily. Their vulnerabilities are increasingly evident and worrisome.

The eventual answer may depend on cities' and counties' motivation and capacity to shape their own energy futures. Most if not all have multiple compelling reasons to accelerate use of clean local energy resources (CLERs). Where they do, local grids whose basic functionality hasn't changed over many decades will have to change. The new capabilities and flexibilities they will need are feasible now. In most cases, the need is not yet compelling, nor are there committed plans for CLER deployment.

Until local policies clearly favor and drive CLER deployment, deferral of local grid changes to maximize electric system and local benefits will probably continue. Response to symptomatic

problems and surprises has so far only triggered additional restrictions and economic penalties impeding CLER deployment. This response seems to be gaining momentum nationally, and even in California, consistent with political trends. However, in a decarbonization and resiliency context, it is likely to be technically and economically counter-productive in the longer term .

Cities and counties have an increasing stake and role in shaping the future of local energy grids. What will draw their attention to the matter? Economically developable clean local energy resources? Technology tipping points? The need to decarbonize? The opportunity to strengthen local economies and make them more resilient? The fact that local infrastructure change is best managed locally? All of the above? We offer some brief perspectives on these questions in the following paragraphs. We invite questions, comments and suggestions. Please send them to [gbraun@iresn.org](mailto:gbraun@iresn.org).

### **CLERs and DERs**

Electric utilities compartmentalize CLERs in the category of “Distributed” Energy Resources (DERs), primarily because CLERs are/can be connected to their electricity “distribution” systems. Regardless of perspective and terminology, there is now a breakthrough opportunity to accelerate the deployment of economic, efficient and environmentally responsible CLERs/DERs into competitive energy markets. Fully exploiting the opportunity will require investments in “smart” city and county sized grids and especially in smarter and smaller solar “micro-grids”. The opportunity in California is improved by the on-going rapid expansion of Community Choice, though the future trajectory of Community Choice is as yet unclear. To read the recently posted IRESN white paper, *Community Action for Clean Local Energy Resources*, click [here](#).

### **Grid Modernization**

To the current global electricity industry, grid modernization could mean investments to achieve more tightly coupled high voltage transmission systems spanning continents. And/or it could mean local grids that balance local supply and demand, support local resiliency goals, and help strengthen local economies. If it weren't for technology tipping point, plus the unwelcome costs of decarbonizing or failing to decarbonize, getting the meaning right would not be an urgent matter.

But it is urgent. Solar and wind industries reached tipping points globally in the past decade. As a result, wind and solar power are now both economically and environmentally preferred. The next energy and transportation tipping points on the horizon will create unprecedented opportunities for grid owners, communities and energy users to better integrate on-site and community renewable sources and to accelerate decarbonization. Some will claim them. Some sooner than later. Some may fully appreciate and act on the need for expanded collaboration between communities and grid owners. There is an urgent need for both to actively support energy user decisions to decarbonize and deploy CLERs.

In response, must the US electricity grid be modernized and even transformed? Or will incremental evolution suffice? What would modernization/transformation mean for grid owners and communities? IRESN recently offered a perspective on these questions at the 8<sup>th</sup> Annual Statewide Energy Efficiency Forum in Fresno, CA. For the IRESN conference presentation and

speaker notes, click [here](#). For a view of grid modernization at the Federal level, click [here](#). For a provocative and sweeping discussion of the disruptive effects of energy, transportation, and IT sector tipping points, click [here](#).

## **Energy Sector Decarbonization: Steering Wheels and Accelerators**

The steering wheels of national and state energy policy have gradually turned in the direction of increased renewable electricity supply. Even in California though, acceleration has been intermittent and unsteady. The last few decades of US history teach that high level policy support for clean energy ebbs and flows according to national and state election results.

Even so, there is now compelling evidence that cities and counties can dramatically accelerate decarbonization in their jurisdictions by focusing on integrative renewable energy and, where necessary, by adding energy to the utility services they already provide. Their ability to put political differences aside in such local matters can lead to fast, orderly and uninterrupted progress.

Specifically, prudent expansion of Community Choice in California can bring state and local officials and the energy businesses they regulate into closer engagement. Trust relationships that can develop are essential to accelerated decarbonization and energy infrastructure resiliency. To read more, click [here](#).

## **Can Community Choice Drive Local Energy Integration?**

California's electric utilities, both investor and publicly owned, do excellent work exercising a business model that has served modern society well for many decades. However, top down vertical integration, once the impetus and context for state regulation, has been put aside in order to encourage competition in electricity supply. What levels and dimensions of integration are now possible? What work can Community Choice do that adds missing dimensions to the reliably excellent work of incumbent electricity service providers? Can the result be "more than excellent"? Will collaborative energy service models evolve to deliver more than just the sum of current electricity generation and grid operation parts? These questions will be taken up in future IRESN sponsored conversations, webinars and events. For a preliminary discussion, click [here](#).

## **Smart Communities Make Better Energy Choices**

California counties and cities are in the vanguard of a burgeoning global "Smart Cities" movement which revolves around data, automation and local infrastructure. It encompasses new services and web/data-enabled automation necessary to make modern California cities more resilient in the face of climate change.

The on-going evolution of "smart cities and counties", as well as transportation electrification and micro-grid deployment, will require active engagement by Community Choice agencies. Fully developed smart cities and counties that partner with Community Choice agencies will have help in reducing their carbon footprints much faster and more completely than other California cities. To read more, click [here](#).

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