The Western Interconnection of the nation's electricity grid is an enormous machine providing power to our region's homes, businesses, and industries. As more low-cost and clean renewable energy is added to the system, the grid needs to be operated in a different way to continue providing reliable service. This fact sheet looks at two markets: the existing Western Energy Imbalance Market (EIM) and a proposed western regional "day-ahead" market run by an independent system operator. It examines how these markets both help the clean energy transition, how they differ, and how they work together to provide the most effective solutions for a clean energy grid.

WHAT IS THE WESTERN ENERGY IMBALANCE MARKET (EIM)?

The California Independent Systems Operator (CAISO) has partnered with power providers in eight western states to establish the Energy Imbalance Market (EIM). The EIM is a "real-time" wholesale market that delivers the difference between the day-ahead forecast and actual demand for electricity (the "imbalance") in 5-minute increments. Because most electricity cannot be stored in large amounts, the demand and supply of power must be continuously balanced to keep the grid stable. Instability can lead to blackouts. If more energy is needed than predicted, producers may trade electricity in the EIM's real-time market to make up the difference.

WHAT IS THE WESTERN REGIONAL GRID?

The western grid is the network moving electric power throughout the entire western region, also called the "Western Interconnection." The Western Interconnection spans more than 1.8 million square miles, including parts of 14 western U.S. states, Canada's British Columbia and Alberta provinces, and part of Baja California state in Mexico. While power transmission lines physically link everything, movement of the electricity over the grid is fragmented. There are 38 separate entities, called "balancing area authorities," responsible for operating different parts of the grid across the West. This fragmentation leads to an inefficient use of power plants and transmission because the 38 balancing area authorities are not able to share resources and infrastructure effectively. **An integrated Western regional grid would balance energy supply and demand with a "day-ahead" market that matches electricity to the projected load over the next 24 hours.**

HOW WOULD AN INTEGRATED WESTERN GRID BUILD UPON EIM'S SUCCESS?

Since its 2014 launch, **the EIM has yielded major benefits for all of its members, including lower emissions of greenhouse gases, lower energy prices, and improved grid efficiency.** If the western grid was unified under one operator with an independent governing board, it could coordinate power generation and transmission across the entire Western Interconnection. It would also reduce the cost of transmission and facilitate the sharing of reserve-power, preventing unnecessary construction of fossil-fueled backup power plants.

Integrating More Clean Energy

A major benefit of the EIM and of a potentially unified western regional grid is the increasing use of clean, renewable energy sources, such as solar and wind. The larger the system footprint—the area from which energy is being drawn—the easier it is to take advantage of variable renewable energy. For example, the sun is often shining in parts of the West while other places are obscured by clouds. The wind is usually blowing somewhere in the West when it is not in other parts of the region. **By drawing power from across the region, an integrated western grid could ensure that clean power is available in nearly every hour of the day.** Furthermore, California's clean energy could reach a broader market, so we wouldn't have to waste it when supply exceeds demand at certain times. Today, California sometimes produces more clean electricity than we need and is forced to "curtail," or turn off, some renewable power.

Lowering Costs

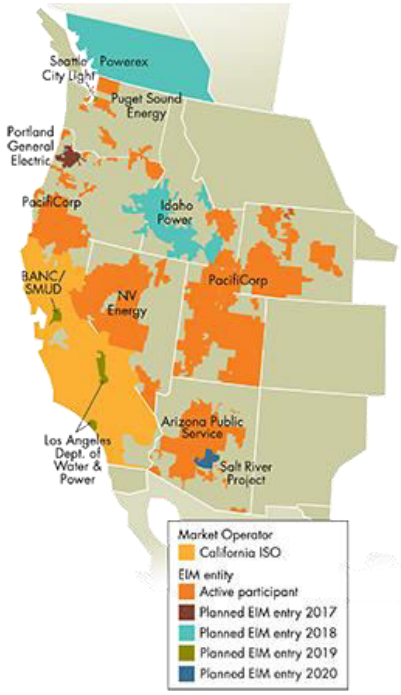
Because renewable energy is always the cheapest electricity to operate and therefore always chosen first in an energy market, the western EIM and an integrated western grid can make clean power more accessible throughout the region, lowering costs for consumers and reducing emissions.

Since its launch, **the western EIM has saved more than $173 million for participating utilities by making more low-cost, renewable energy available to meet unexpected demands. The savings would be even greater with a market-driven, integrated western grid**, because with fully coordinated power plant operations, demand could be quickly met with the most cost-effective resources from throughout the West. A study done for the California legislature in 2016 estimated that a fully integrated regional grid could reduce costs for California energy consumers, alone, by $1 to $1.5 billion annually by 2030.

Job Creation and Economic Growth

With an integrated regional western grid, in-state wind and solar plants could operate at higher capacity to serve not only California's needs, but also the needs of our neighbors for low-cost electricity. This will result in more clean energy and jobs as California's renewable industry expands and neighboring states retire their costlier coal-fired power plants and less-efficient gas plants. A fully integrated western grid will also stimulate the state's economy, putting billions of dollars back in the pockets of working families and small businesses thanks to lower energy bills.

WHAT'S NEXT FOR THE WESTERN ENERGY IMABLANCE MARKET?



The EIM is growing across the West, as utilities in Washington, Oregon, Nevada, and Arizona have joined California in integrating growing amounts of renewable energy in their parts of the energy grid. Power providers participating in the EIM include:

- Los Angeles Department of Water and Power (LADWP);
- Powerex Corp., based in British Columbia, Canada;
- PacifiCorp, serving California, Oregon, Washington, Idaho, Utah and Wyoming;
- NV Energy, based in Las Vegas, Nevada;
- Puget Sound Energy, based in Bellevue, Washington;
- Arizona Public Service (APS), based in Phoenix, Arizona

Other providers are set to join the western EIM at a future date, or are considering membership:

- Idaho Power, based in Boise, Idaho;
- Sacramento Municipal Utilities District, based in Sacramento, California;
- Seattle City Light, based in Seattle, Washington;
- Salt River Project, based in Tempe, Arizona

WHAT'S NEXT FOR THE WESTERN REGIONAL GRID?

A West-wide, "day-ahead" electricity market operated by an independent system operator will deliver even greater benefits than those offered by the successful western EIM. California's leaders should initiate a responsible transition from a fragmented western energy grid to a more efficient, integrated one. The first step is state legislation authorizing the expansion of the California ISO into a regional system operator with a fully independent governing board.