# New Promise for Transmission Line Projects

## Bringing multi-stakeholders together in support of a new routing

BY CRAIG COX

Electricity is the lifeblood of modern society, providing the power needed to conduct everyday life and business. This power, which is delivered by large transmission lines, often comes from electric generation facilities that are located far from cities and towns where it is used.

Not only is demand for electricity increasing, but regulators, policymakers and even many consumers want more of this electricity to come from clean, cost-effective renewable energy resources such as wind, solar, geothermal, biomass and small hydropower. While these resources are abundant, clean and cost-competitive, they are typically located in thinly populated areas that are even further from major cities than many conventional power plants that burn coal or gas. With limited transmission capacity to link these renewable energy resources to major markets, these affordable and clean energy resources are often "stranded."

Even where transmission capacity itself is not an issue in particular areas, the nation's overall transmission infrastructure is antiquated and in many areas, prone to costly blackouts or brownouts. Government and industry experts estimate that the cost of power outages in the United States is at least $119 billion annually.

## GRID MODERNIZATION

The "grid" is actually one enormous machine…the largest machine in the world, and its transmission constraints are highlighting its age and inflexibility. In the western grid alone, over $200 billion will be spent for energy infrastructure over the next 20 years in order to ensure reliable electric service into the future. Therefore, the choices made today in modernizing this enormous machine will determine what is being used throughout the continent in 2030, 2050 and beyond.

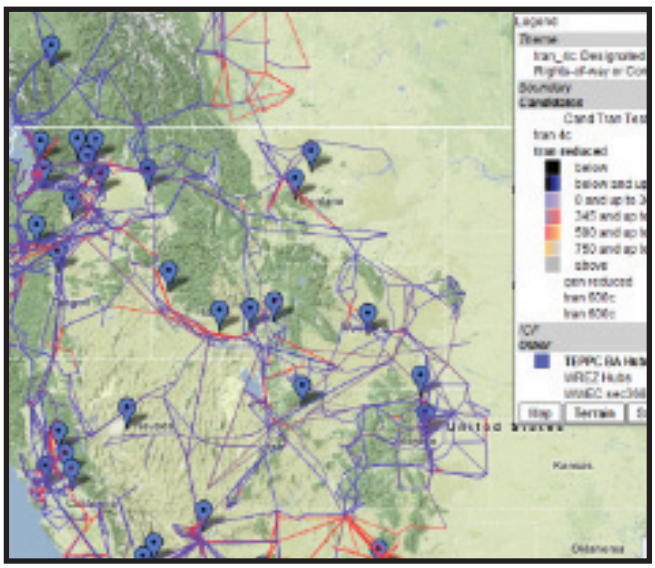
The North American electric power grid is comprised of three parts:

1) **Western grid:** encompassing 14 states, two Canadian provinces and part of northern Mexico

2) **Eastern grid:** includes the other states and provinces, except Texas

3) **Texas grid** located entirely within the Lone Star State.

Some multi-stakeholder collaboratives and transmission-planning efforts have been created through state legislative or regulatory actions. One example is the Texas Competitive Renewable Energy Zones (CREZ), which was created under Texas legislation. It has spurred tremendously beneficial new transmission in that state. Another is the California Renewable Energy Transmission Initiative. Created by the California Energy Commission, it has helped to identify which transmission projects are needed to advance that state's ambitious renewable energy goals.



Today's transmission planners have access to new tools that can visually illustrate the trade-offs involved with each routing option.

Another notable example is Minnesota's CapX2020, profiled in the article on page 24 written by Craig Poorker, SR/WA and Pam Rasmussen. CapX2020 is a recent model that demonstrates how investor-owned, rural cooperatives and municipal utilities can collaborate in developing comprehensive forward-looking transmission plans. By leveraging effective outreach efforts, user-friendly websites and other stakeholder engagement tools, CapX2020 has accomplished the often-difficult task of gaining public support for utility investments in new transmission infrastructure.

Other collaborative efforts are grid-wide, such as the Western Electricity Coordinating Council, which coordinates transmission-owning entities across the entire grid. It has a number of task forces and steering groups advising it on the topics of region-wide transmission planning and development.

## GETTING AGREEMENT ON THE GOALS

To address the severe transmission constraints that threaten economic growth and productivity, decision-makers throughout North America have started to bring stakeholders together to build consensus on grid modernization. The primary goal of these multi-stakeholder collaborative meetings is to determine how to best make the continent's electric transmission grid more secure and reliable in the most cost-effective and environmentally sensitive manner. Participants generally agree that the goals of a modernized grid should include job creation, economic development and enhanced economic competitiveness, as well as reduced emissions and lower water use from power generation.

Actual transmission siting and routing decisions are made by state and local utilities, regulators and other officials. But grid-wide planning efforts are critical in providing key information to these decision-makers regarding system needs and the impact of proposed projects that, in turn, inform the entity making the project financing, siting, and regulatory approval decisions. The grid-wide planning process helps ensure informed decision-making throughout the grid.

Once an actual transmission project is proposed, then a typical project undergoes various steps toward approval and construction. These steps include:

- Path rating to determine the reliability impacts of the proposed project on the transmission system
- Siting to identify the impacts of the proposed project on the environment and other land uses
- Cost allocation to establish who will pay for the proposed project and to assure cash flow to support project development

## LEVERAGING NEW TOOLS OF THE TRADE

In recent years, the siting and routing of new transmission lines has become an increasingly sensitive issue, especially as the demand for electricity grows faster than the infrastructure needed to deliver it.

When new high-voltage electric transmission lines are proposed or existing lower-capacity lines must be upgraded, planners have a range of options for siting and routing these lines. However, some options, such as using the condemnation process, can engender hostility from local communities, stakeholder groups, regulators or other entities. Other options have tradeoffs as well. Rerouting can be an expensive option, while placing transmission lines underground over long distances can be technically unfeasible and/or cost prohibitive.

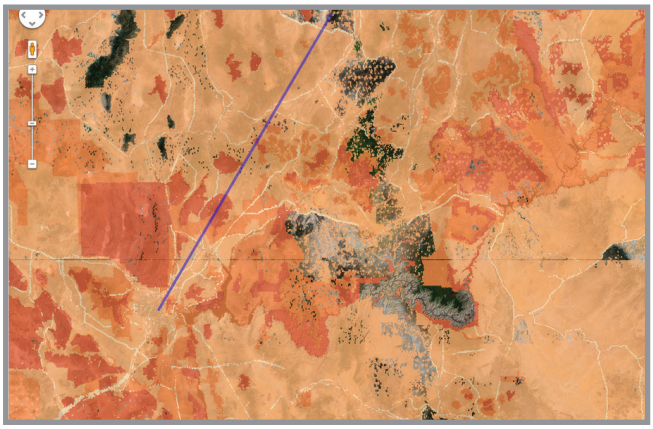
Fortunately, today's transmission planners have new tools available, many of which did not exist during previous generations of transmission development. The process of "threading the needle" to route new transmission infrastructure has been significantly enhanced.

The California Energy Commission is now using an innovative GIS-based tool developed by Facet Decision Systems of Vancouver, B.C. The company's Planning Alternative Corridors for Transmission (PACT) tool was developed with input from a wide range of stakeholder groups. It provides the ability to prioritize multiple value routings that must be achieved or preserved, and then to see the effects of different routings on a map.

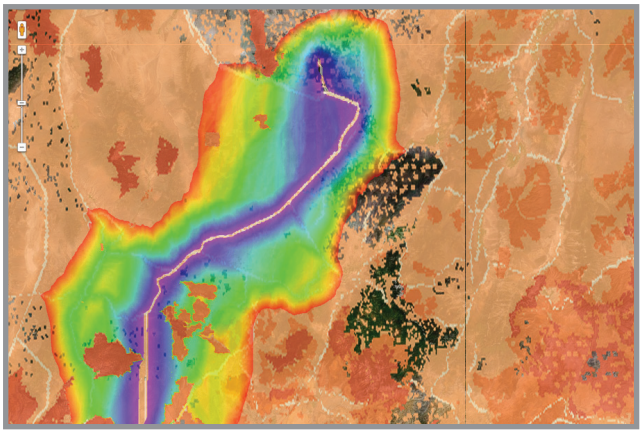
## BALANCING THE PRIORITIES

In evaluating a proposed new transmission line, each constituency has its own sets of priorities and goals. The unions might rank the project's job-creating benefits as the top priority, while community residents might place a higher value on protecting open spaces or viewsheds. Conservationists might value habitat preservation over other goals and developers might value cost minimization.

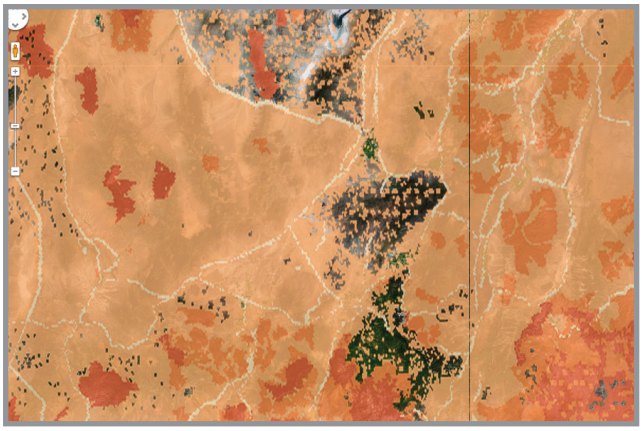
The PACT software will adjust the routings to achieve these goals. It can identify which routings will create the most jobs, protect the most habitat and accommodate each stakeholder group's top priorities. The software not only visually illustrates each group's primary concerns, it gives transparency to the trade-offs that various interest groups must balance in order to come to agreement in support of one routing.



This 4-level environmental protection priority/risk map was developed with stakeholders. The light areas are existing rights of way or corridors. The dark areas are high-risk or high-priority protection areas.



This shows the optimal path across the landscape based on the environmental priorities.



This map combines the best path with Western Electricity Coordinating Council's 4-class Environmental Data Task Force categories. The dark gray areas indicate where the underlying satellite data shows through because no environmental classes have been defined.

*For more information, visit www.facet.com*

## Non-Wire Alternatives

In the long term, new construction and upgrades of existing transmission infrastructure will be critical to making our electric power grid more robust and reliable. However, there are also other options to consider for increasing the capacity of electric power grids without new construction. Non-wire alternatives rely on modifications to utility operations that can take advantage of modern control technologies to boost the amount of electricity generated. With many non-wire alternatives available, some of the leading solutions are listed below.

- **Energy Imbalance Market:** Actual electricity demand per hour will always be slightly different than the amount forecasted, and actual power generation will be more or less than what was scheduled. In the western grid, creating a regional market with a centralized dispatch to supply these imbalances allows the most efficient generators to run more and the least efficient to run less or not at all. It decreases the amount—and sizeable cost associated—of operating reserves that each utility must carry, allowing utilities to meet regulation needs more cost-effectively from a much larger pool of generators across the region. It also provides real-time power flow information system operators need to improve reliability.
- **Faster scheduling and dispatch:** This option allows generators to change the amount of power they provide to the grid every five minutes, rather than once every 30 to 60 minutes (the current practice in most of the western U.S.). It enables energy markets to supply operational flexibility at a lower cost.
- **Distributed Generation:** Small-scale photovoltaic systems and other forms of clean distributed generation would provide low-emissions power in city centers, and help avoid the incremental cost of importing electricity into densely populated areas.
- **Demand Response:** Responding to demand allows the end user to reduce their electricity usage in a given time period, or shift that usage to another time in response to price signals, financial incentives, environmental conditions or reliability signals.
- **Demand-Side Management:** The use of electricity can be reduced through activities or programs that promote electric energy efficiency or conservation and help create more efficient management of electric energy loads.

While California is a state known for its difficult siting, Southern California Edison has used these tools with very good results. Their recent successes in routing new transmission lines demonstrates the tool's effectiveness in helping diverse interests come to agreement on routings.

Typically, PACT has been used to evaluate individual proposed lines one at a time. But Facet is undertaking an ambitious project on behalf of the Western Electricity Coordinating Council, which coordinates the operating and planning activities of the entire western grid.

For this project, the tool will be used to model 54 separate possible routings for potential new transmission lines across the west. Once finalized, these grid-wide modeling results should provide unprecedented insight into how a large-scale buildout of new transmission lines can be planned in an environmentally sensitive and cost-effective manner, while delivering new economic, energy and electrical benefits for the entire region.

### WHAT IS THE END GAME?

The end game for utilities, energy developers, the various stakeholder communities and most other parties is "earned consent."

Achieving earned consent comes from taking the time to conduct multi-stakeholder collaborative meetings to learn about the needs and priorities of each group. Stakeholders just want to be heard, and that's exactly what these collaborative meetings provide – a forum to voice their concerns. Even if the various groups are faced with trade-offs or constraints, at least they have been given the opportunity to be heard. Of course, this may sound like a laborious or time-consuming process, but when a new high-voltage line delivering clean energy is completed without having to resort to the condemnation process, all parties can feel satisfied. PACT has been successful in advancing consensus projects that might otherwise ignite controversy.

Whether stakeholders use the new GIS tools to achieve earned consent or rely on the give and take of negotiations, a new transmission line can truly provide a win-win opportunity for economic development, the environment and system reliability.

***Craig Cox***

*As President of Lyghtco, LLC, Craig is a government affairs and public policy consultant for the public, private and non-profit sectors. He fosters collaborative, consensus-based approaches that lead to new renewable energy project and transmission development. Craig has been a member of many energy and transmission task forces, including the Western Governors' Association and the State of Colorado.*