

Exploring Ways to Expand Power Grid

August 31 2009, By Tim Lucas

(PhysOrg.com) -- The U.S. will need to expand and modernize its outdated power transmission grid to incorporate more renewable energy sources, but balkanized ownership and regulation are going to make that process slow and difficult, according to a new Duke University analysis.

"Complex and fragmented regulatory structures increase transaction costs, delay the permitting process, and add to risk and uncertainty," said technology policy analyst Chi-Jen Yang of the Duke-based Climate Change Policy Partnership (CCPP). "Local opposition and other siting difficulties, along with traditional reliability-focused planning, also have impeded the development of a modern grid," he said.

"Because of these, there has been a sustained under-investment in transmission for several decades," said Yang, who is the lead author of a 26-page [paper](#) from CCPP reviewing these challenges and exploring eleven policy options for addressing them.

Real estate investment trust funds (REITs) may be a feasible approach for reducing ownership fragmentation and inducing new investment, Yang finds. Consolidating public-owned transmission assets could also be considered, as well as distributing the costs of transmission to ratepayers across a broad region to help fund large-scale investments.

Dealing with local opposition to new transmission lines will not be easy, Yang says, but ways exist to reduce investors' risks in the siting process. Potential options might include interstate siting compacts and allowing for cost-recovery of transmission work in progress. It might also be

possible to provide recovery of prudently incurred costs if a project must be abandoned for reasons beyond the investor's control.

Government financial support for feasibility studies and preliminary environmental impact studies for projects of national importance would further help lower investors' risk. Extending federal siting authority to promote renewable energy could address siting issues for critical projects.

“Our most abundant renewable energy resources are concentrated in remote regions that are often not linked, or only weakly connected, to the existing transmission network,” Yang says. “Developers won’t invest in building renewable-generating capacity until transmission becomes available, and transmission investors won’t invest until sufficient renewable power generating capacities are developed.

Establishing national [renewable energy](#) zones may be a logical first step to break this cycle of inaction.” A broader scale planning scheme, such as interconnection-wide planning, may be another step.

Load-balancing technologies, such as smart grid devices, demand-response resources and energy storage have the potential to reduce the need for transmission expansion, Yang says. However, “while the vision of a smart grid is appealing, policymakers should understand the costs and hurdles of large-scale, smart grid deployment,” Yang says.

CCPP is an interdisciplinary partnership of Duke’s Nicholas Institute for Environmental Policy Solutions, Nicholas School of the Environment and Center on Global Change. CCPP researches carbon-mitigating technology, infrastructure, institutions and systems to inform lawmakers and business leaders as they lay the foundation of a low-carbon economy.

More information: [www.nicholas.duke.edu/ccpp/ccp...
dfs/transmission.pdf](http://www.nicholas.duke.edu/ccpp/ccp...dfs/transmission.pdf)

Provided by Duke University ([news](#) : [web](#))

Citation: Exploring Ways to Expand Power Grid (2009, August 31) retrieved 26 April 2024 from <https://phys.org/news/2009-08-exploring-ways-power-grid.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--