The electricity grid is one big machine. Transmisssion must be centrally coordinated. Generating units must all be in sync. Voltage levels have to be maintained. There must constantly be an even match between demand and supply. But you would hardly know it from the way we look at energy policy at the states and on the national level.

Each good policy option has its champions, and each debate occupies its own silo. Distributed solar? Check. Energy efficiency? Check. Transmission expansion? Renewable Portfolio Standard? Smart meters? Check, check, check.

All of these important issues offer complicated choices. Proper analysis takes a lot of time, and there are dozens of interested stakeholders. As a result, regulators and lawmakers tend to look at each option as it if stands alone. What can we do to promote energy efficiency? What kind of incentives will adequately encourage the use of photovoltaics? What kinds of power plants should people be building?

There is little doubt that our current energy and climate challenges demand a close examination of all options. So what's the problem?

Unless we remember that the grid is one big machine, and look at all of these policy options in a coordinated fashion, we are destined to do things that conflict, and take actions with unintended consequence. The result is that we may fail to accomplish the things that we thought were so important.

Take the construction of new electric transmission lines as an example. For renewable energy to make a major dent in our power supply, we need big windfarms, large concentrated solar arrays, and reliable geothermal power plants. These resources tend to be far away from the load center — the place where most of the power is needed. That means we need lots of big transmission lines to bring the power to the load.

To solve this problem, Texas and California have identified renewable energy development zones and started the process of finding and building the highest priority transmission lines to get to the renewable resources. The western states are jointly undertaking a similar effort, and various bills in Congress would establish a national initiative. Congress is also considering giving federal regulators the power to approve such lines in order to make sure that the job gets done. This could lead to excess transmission capacity, but few are complaining, since utilities like capital investment, generation developers want lots of optional pathways for delivery, and transmission operators hardly ever see a new transmission line they don't like. It is consumers and some environmental groups that are left to disagree.

The danger is that new transmission lines developed outside of a broader context might induce more carbon emissions than any new renewables might save by increasing the ability to import low-cost coal and natural gas derived power. A massive investment in new lines might be at the expense of more targeted "distributed" renewables that could be located at customer premises and tailored to meet local demand. A singular focus on renewable energy and related transmission might ignore less expensive and environmentally superior investments in energy efficiency.

Does that mean that new transmission lines are unimportant? Hardly. But we will likely be putting our broader policy goals at risk if we launch each of our favored programs from an isolated silo. The solution is to marry each of these initiatives with a greater reliance on utility-based, integrated resource planning. Find good places for renewables and related transmission, and then send that information to the states where regulators can insist that each utility develop a comprehensive plan designed to maximize the results we all care about — effective reduction of negative environmental impacts including carbon emissions, resource diversity, grid stability, cost control and (most importantly) a reduction in demand through efficiency improvements. The megawatt not used remains the best choice from an environmenal and cost perspective.