

## 9. Conclusions and Thoughts for Future Analysis

We drew four general conclusions from the analysis presented in this report:

- Energy intensity has varied significantly among the 48 contiguous states over the past two decades.
- There are differences both within and across states in how energy intensity has changed over time.
- A number of critical factors impact energy intensity.
- It is possible to identify states that have had reductions in energy intensity that are greater than the average reduction for all states.

The results from this study suggest that there are opportunities for most states to achieve greater reductions in energy intensity, as suggested by the performance of the states that have most dramatically reduced energy intensity. The DOE could facilitate further reductions in energy intensity by increasing its involvement in helping states to learn from each other and by providing guidance concerning which programs have been most effective in reducing energy intensity at the state level.

What could follow from this analysis is a more-detailed examination focusing on a small group of states. In cooperation with those states, the follow-on study could determine the potential for translating successful actions in one state to another state and could help to guide regional and national energy policy. The DOE could benefit from learning how state actions may have impacted the factors we measured in this study.

Next steps could include:

1. An inventory of energy efficiency policies and program actions in the top-ranked states identified in this study
2. Development of a set of criteria to help judge the success of various state energy programs—developing a successful energy program is not just a matter of how much money is spent on a program, but how that money is spent and what sort of program the funding supports.

3. Examination of state energy-efficiency programs to evaluate their impact on energy intensity and their success in reducing it
4. Determination of replication potential—this effort would involve determining whether the successes in some states could be replicated in other states or whether the unique conditions in those states generated the results.

Additional data analysis would be required for the follow-on study, including a more-detailed examination of the factors that influence energy intensity and whether specific characteristics of those factors led to changes in energy intensity in the states that had the largest energy intensity reductions. For example, energy end use could be disaggregated even further. It may also be possible to expand the number of factors and further refine the estimates of future reductions in energy intensity. Other statistical techniques could also be used to evaluate whether the reductions observed in this study are trends that depart from expected economic equilibrium or not. State factor effects could also be further examined to determine if certain policies might influence certain factors and therefore indirectly promote reductions in energy intensity.

Measuring the impact of national energy policy and national energy research and development could be another important element of a follow-on study. It may be possible to separate the impact of energy-related technological advancements from the impact of policies and other factors that we assume are reflected in the energy intensity residuals and to trace some of that impact back to federal research and development efforts.

The analytical technique described in this report could also be employed to examine other measures of energy use. Given the limitations in the energy intensity analysis presented in this report, the follow-on analysis could provide a more-robust picture of the impact of state-level energy-related actions, which could be used as a tool for evaluating energy policies and programs across states. A fuller understanding of the source of variation in energy intensity among states can help the nation to achieve further reductions in energy intensity, as outlined in the energy efficiency recommendations of the 2001 National Energy Policy.