

Scenarios for SUFG Modeling for Report to Energy Policy Task Force

The purpose of the proposed scenarios is to develop a reasonable number of futures with which to inform members of the 21st Century Energy Policy Development Task Force (Task Force) of the potential impacts from changes to the composition of the Indiana generation portfolio over both a near-term and long-term period in response to key economic and technology trends.

There are eight scenarios on which there may be a number of sensitivities as time and circumstances permit. The eight scenarios are:

1. An updated reference scenario that updates scheduled generating unit retirements to reflect IPL's recently filed IRP. Other inputs are the same as those used for the base forecast in SUFG's 2019 Forecast report.
2. The reference scenario includes unit retirements consistent with recent utility IRPs or more recent information as provided by the companies in response to SUFG data requests to develop the 2019 Forecast. A key consideration is what happens to the resource portfolio and statewide utility revenue requirements if no coal-fired units are allowed to retire prior to the year 2025. Exceptions to this are Duke Energy's Gallagher units 2 & 4 which cannot continue operation past the date of the Consent Decree and I&M's Rockport Unit 2 due the expiration of the lease agreement. A key input to this scenario is the necessary capital investments and operating & maintenance costs necessary to keep a unit, with a planned or projected retirement prior to 2025, in commercial operation to 2025. This data was provided by all five investor-owned utilities.
3. To better understand the implications of continued operation of coal-fired generation resources, given current economic and technological trends, another scenario will use the reference scenario but defer all retirements of coal-fired units to 2030. Similar to Scenario 2, the utilities supplied data on the necessary capital costs and O&M expenses to keep affected units from retirement prior to 2030. In addition to the three exceptions in Scenario 2, Rockport Unit 1 cannot operate beyond 2028 given the Consent Decree.
4. The fourth scenario will consist of a high natural gas price scenario similar to that which might occur with a long-term moratorium on fracking. Given the tremendous uncertainty over what the price of natural gas would be without fracking, an arbitrary, very high price (\$10/mmBtu) will be used.
5. A high energy efficiency scenario. Method will involve doubling the level of energy efficiency currently embedded in the SUFG's Base Case which is based on information from the individual utilities. The scenario will also include the assumption that the energy efficiency budget for each utility will increase at the same rate as the quantity of EE savings over the planning period.
6. Distributed resources, electric vehicles and energy storage scenarios. These scenarios will rely on data and information provided by LBNL as part of the work LBNL is developing to evaluate the potential impact on the distribution systems of increased levels of distributed generation resources being developed.
7. A low renewable price scenario to evaluate how Indiana's resource portfolio might change if renewable prices are even lower than currently projected to be the case. The reference scenario uses starting capital costs for wind and solar based on data from the Energy Information Administration (EIA). Cost decreases over time are based on National Renewable Energy Laboratory's (NREL) moderate trajectory. For this scenario, NREL's starting costs (which are

lower than EIA's) will be used and NREL's more aggressive trajectory of future decreases will be used.

8. A High Industrial Cogeneration (or Combined Heat and Power or CHP) scenario. Since future industrial self and co-generation is uncertain, a proxy will be used such that CHP completely offsets future growth in electricity consumption. This will be modeled by keeping the industrial load forecast flat across the state's IOUs. Note that SUFG's not-for-profit models are not at the sectoral level, so determining a flat industrial forecast for them is problematic.

An important sensitivity across several of these scenarios includes the imposition of a carbon tax.