

11. What are the current and projected relative costs per kilowatt hour for existing and new builds for wind, solar, hydro, biomass, landfill gas, coal, natural gas, nuclear, and other sources? How would those differ if placed in another jurisdiction electrically tied to Michigan?

The Commission Staff, with input from a group of electric providers, developed a combined cycle natural gas plant levelized cost of \$66.23 per MWh in 2013 dollars for a plant entering service in 2016.

The Energy Information Administration (EIA) makes projections of levelized costs for various types of electric generation. The EIA costs are provided in 2011 dollars for plants entering service in 2018 and are overnight cost estimates. EIA provided the levelized cost of renewable and non-renewable energy in its Annual Energy Outlook 2013 Early Release. EIA projects an advanced coal plant levelized cost range of \$123.00 per MWh to \$135.50 per MWh and a natural gas combined cycle plant cost range of \$65.60 per MWh to \$67.10 per MWh.

Carbon regulation is expected to increase the cost of coal and natural gas generation. EIA levelized cost data shows approximately a \$12.50 per MWh cost difference between an advanced coal plant and an advanced coal plant with carbon sequestration technology. Increased carbon regulation should not impact the cost of renewable generation. EIA shows a levelized cost of \$86.60 per MWh for wind generation; Michigan is currently experiencing prices in the mid \$70.00 per MWh range absent special tax treatment and as low as \$49.00 per MWh including the benefits of the production tax credit. EIA projects that for projects entering service in 2018, in 2011 dollars, solar photovoltaic levelized costs will be \$144.30 per MWh, hydro \$90.30 per MWh and biomass \$111.00 per MWh.

All EIA levelized costs discussed here are absent special tax treatment such as the investment and production tax credits. The investment tax credit can reduce capital costs for renewable installations by 30%. The Database of State Incentives for Renewables & Efficiency reports that the production tax credit provides inflation-adjusted payments of \$23.00 per MWh for wind and closed-loop biomass and \$11.00 per MWh for other eligible technologies for the first ten years of service.

Source:

Staff Combined Cycle Natural Gas Plant Levelized Cost -

<http://efile.mp.sc.state.mi.us/efile/docs/15800/0036.pdf>

EIA Annual Energy Outlook 2013 Early Release -

http://www.eia.gov/forecasts/aeo/er/electricity_generation.cfm

Database of State Incentives for Renewables & Efficiency -

http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US13F&re=1&ee=1