

MEMORANDUM – Description of Model used to Estimate Generation Efficiency Potential in Minnesota

To: Project Stakeholders
From: Travis Hinck, GDS Associates
Subject: GDS' Proposed Generation Potential Model
Date: June 6, 2017

The model to estimate generation efficiency potential is based on identifying opportunities for improving heat rates at generation facilities. This approach is modeled on the TRM measure to calculate conservation savings from improved heat rates. In order to estimate the overall heat rate improvement opportunity, we will populate a spreadsheet of parameters defining all generation facilities that serve load in Minnesota. We will compare the gross and net heat rates of operating MN plants to top performing plants of the same type across the county to identify opportunities for improved efficiency. For the identified opportunities, we will dig deeper into the plant operations to determine whether achieving an improved heat rate is feasible economically or if there may be unique circumstances preventing improvements.

The proposed approach to estimating generation efficiency potential starts at a high level compared to measure-based models used to estimate DSM and T&D potential. We believe this approach is appropriate for two reasons. First, there is wide variety of possible generation improvements, many of which will not apply to most facilities, so using a measure-based approach would take far more effort and produce only marginally more-accurate results. Second, much of the data required is accessible from existing sources which will reduce the required effort on the part of stakeholders.

There are two types of data we will need to collect: facility parameters and more-detailed, qualitative descriptions of how some plants are operated. Facility parameters will include fuel type, boiler technology, rated output capacity, commissioning date, historical heat rates, etc. We will start by populating the model with data we already have access to (FERC Form 1 filings, SNL database, etc). Once we have collected all already-available data, we will contact facility owners to verify the accuracy of the information we've collected and fill in any missing information.

In addition to the quantitative data used to populate the model, we will also ask more-specific questions to facility owners to better understand plant operations at sites where heat rate improvements may be possible. Examples of information we're looking for may include understanding maintenance scheduling, dispatch patterns, or whether they have already considered heat rate improvement projects in the past. For some sites with large improvement opportunities, we may schedule brief phone interviews with plant operators. We will make every effort to minimize the input required from stakeholders and coordinate across projects to limit the number of times we contact each stakeholder.

As a final verification step, we will compare our results to those generated by a similar EIA model developed in 2015. That model was discovered as part of our initial literature review for the EUI efforts in Minnesota and had some of the same goals as this project. Those results do not quite apply directly to this effort, but will serve as a reasonable comparison to validate our findings.