

Transmission Service



Any “Integrated Resource Plan,” or IRP needs to address all components of power supply:

- (1) Energy (and REC)
- (2) Capacity
- (3) Transmission
- (4) Ancillary Services

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- Since the inception of MISO (Midcontinent Independent System Operator), Grand Haven has been using **“Point-to-Point” (PTP) Transmission Service**
- PTP transmission service is a short-term, primarily non-firm, alternative to **“Network Integration Transmission Service,” or NITS**
- PTP service was developed by MISO for smaller, primarily municipal, Market Participants (MP) that produce a significant portion of their energy needs using **Behind-The-Meter** (BTM) generation – the PTP service tariff may be eliminated by MISO at some point in the future (MISO’s long-term desire is clearly to move all utilities to NITS)

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- Sims 3, as well as GHBLP's last remaining diesel generating unit, is considered BTM generation
- PTP service requirements and costs are determined hourly (per MWh)
- NITS is a "full-service" firm transmission tariff that allocates regional transmission costs proportionally on the monthly coincident peak load contribution - the vast majority of all MP take NITS (per MW/month)

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- Consumers Energy, DTE, all Michigan rural electric cooperatives, and almost all Michigan municipally owned electric utilities are **NITS** utility customers
- **Only LBWL, HBPW, MBLP, and GHBLP remain on PTP**
- Once on NITS, the economics associated with transmission service essentially become fixed (independent from capacity and energy transactions) – there is no longer any financial incentive (in the form of transmission savings) to generate BTM
 - BTM generation becomes economical only to the extent it can produce lower priced capacity and/or energy compared to other network resources

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- ALL "net" GHBLP power supply savings achieved over the last two calendar years (2016-2017) from Sims operations (as compared to purchasing an equivalent amount of power from the wholesale markets) can be attributed to PTP transmission service savings
- Put another way – the average variable cost of operating Sims (primarily fuel and fuel related expenses) was higher than the average cost of buying short-term market based **Energy** for 2016 and 2017

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- Additionally, the fixed costs of owning, maintaining, and operating Sims (the **Capacity** component) was also significantly higher than a concurrent and similarly sized short-term wholesale MISO Zone 7 (primarily the LP of Michigan) capacity purchase for this period
- However, taking advantage of PTP **Transmission Service** provisions that allowed GHBLP to avoid paying the full NITS tariff resulted in a relatively competitive “**net**” power product for our customers during this period (i.e. combined energy, capacity, and transmission costs)
- **Our transmission savings were of similar magnitude to the increased costs of owning and operating Sims**

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- Transmission savings associated with utilizing PTP service does not come without a degradation in service (reduced reliability)
- PTP service is short-term and non-firm – it can be denied when requested
- NITS, on the other hand, is firm – the full benefits of the “network” come with a higher price
- **The “network” will always be more reliable than a single generator** (this is not to say an individual interconnection to the network will never be interrupted)

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- The reliability of any local grid interconnection within the network is based on the physical configuration of electrical infrastructure in the area (multiple generators and multiple paths from these generators to a particular load)
- Each interconnection to the grid possesses a unique configuration
- The more redundancy built into the configuration at any given point in the network - the less dependency on any single component failure - the more reliable the supply is at that point in the network

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- The actual physical configuration of the local interconnection to the network (and its associated “reliability”) is completely independent from the contractual/financial arrangements any market participant served at that point has made for capacity and energy (it’s forward purchased power arrangements)
- When we say we are buying our energy or capacity from a particular remote supplier, the “network” is not actually delivering power to our distribution system from these resources (local reliability is independent from these contractual arrangements)

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- In other words, electricity will flow under the laws of physics (not according to its contractual path)
- The “system operator,” not an individual market participant, is tasked with ensuring adequate generation into the network to meet all loads at all times (in day ahead/real time operations and future planning activities)
- MISO, in cooperation with the transmission system owners in the region, plan and approve necessary grid upgrades and approve new generator and load interconnections

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- The regional “network” collectively supplies adequate energy (balanced in the Day Ahead and Real Time markets) and generation capacity (Annual Resource Adequacy Plan) to meet all network loads
- MISO is responsible to determine and set these “adequacy” requirements
- There is no mechanism for an individual market participant to determine the “adequacy” or reliability of its power supply resources independent from the network

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- A local retail customer's reliability is primarily a function of the distribution system (and its maintenance) in the area
- **NITS** provides a utility (at the interconnection of the distribution system to the grid) the highest level of reliability (99.99% plus connectivity)
- When was the last time a region wide "network" problem occurred in Michigan? 2003
- A "back-up," emergency, or stand-by, local generator only adds reliability in the circumstances that the network of resources is severed from the load (the local distribution system) above the 99.99% level

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- The North American Electric Reliability Corporation (**NERC**) is the Federal Energy Regulatory Commission (FERC) certified United States Electric Reliability Organization
- NERC develops and enforces **Critical Infrastructure Protection** (CIP) standards (that access and determine the “reliability” of the Bulk Electric System)
- GHBLP has no facilities or equipment meeting the definition of Critical Infrastructure (nor do we possess any components of the Bulk Electric System) and we have no personnel possessing any NERC reliability certifications

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- GHBLP activities and core competencies should become more focused on the distribution of power (our primary responsibility), where we can have the greatest impact on the reliability of service to our customers
- The electric utility industry has developed several performance measures of reliability or reliability indices
 - System Average Interruption Frequency Index (SAIFI)
 - System Average Interruption Duration Index (SAIDI)
 - Customer Average Interruption Duration Index (CAIDI)
 - Customer Average Interruption Frequency Index (CAIFI)
 - Average Service Availability index (ASAI)
- Individual power plant availability and forced outage measures have very little (essentially no) impact on these indices (actual outages are primarily distribution related)

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- Grid operators and planners use assessments of future “resource adequacy” and complex probabilistic (statistical) analyses to determine the projected “reliability” of the regional grid (networked system) and portions of it under multiple “contingency” scenarios and conditions
- These analytics focus on the loss of single and multiple elements (generators, transmission lines, high voltage substations, and subcomponents) – the more contingencies (elements lost) an area can withstand without impacting voltage or sustaining an outage, the more “reliable” a particular grid area or distribution system interconnection
- Reliability indices measure past performance

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- Western Ottawa County currently has significant surplus, or redundant, generation capacity (area network generation resources far exceed area loads)
- In other words, the GHBLP distribution system is in an area of the network that supplies power from local generation to more remote loads (can sustain multiple contingencies)
- Consumers Energy J. H. Campbell Generating Complex (3 units with 1,450 MW of capacity), Consumers Energy Zeeland Generating Plant (860 MW), Holland BPW (308 MW w/o the James De Young Plant), and Zeeland BPW (36 MW) in addition to GHBLP Sims 3 and one diesel (77 MW) – total **2,731 MW** (GHBLP is 2.8% of this total)

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- The result of being in an area of “existing” highly developed Critical Infrastructure.....

Adding or subtracting a smaller generation resource has little or no statistical impact on local grid reliability in our area

- GHBLP does, however, need to ensure adequate and redundant grid interconnections are constructed and maintained that allow the benefits (reliability) of the area grid to be extended to our local distribution system

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- Prior to closing Sims 3, GHBLP must gain NITS
- Additionally, GHBLP must complete an upgrade of approximately 12.6 miles of 69 kV “internal” transmission lines it owns (from the Osipoff substation to the Morford/Sternberg substation)
- Phase 1 (approximately 2.9 miles) was completed in 2017
Phase 2 (approximately 2.4 miles) to be completed in 2018
Phase 3 (approximately 7.3 miles) to be completed in 2019
- GHBLP has filed a NITS service request to MISO with a potential service date of 6/1/20

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- Currently, MISO (in conjunction with transmission owners - Wolverine Power Supply Cooperative and ITC) is conducting a "system impact study" to evaluate Grand Haven's request to become a NITS customer and to determine if any necessary system improvements may be required to facilitate this outcome
- At the time GHBLP becomes a NITS customer, we anticipate "dedicating" our 69 kV assets to the MISO network in exchange for an annual revenue distribution to recover our operating and capital costs associated with these assets – including those that are currently being rebuilt (will offset a significant portion of the NITS charges)

Summary

- Few utilities use PTP transmission
- NITS provides a higher level of service, operational flexibility, and system reliability as compared to PTP
- Without significant BTM generated energy, the economic benefits of PTP are substantially reduced
- GHBLP cannot retire Sims until our 69 kV system improvements are completed (fall of 2019) for reliability reasons, and should remain on PTP as long as Sims is operating
- GHBLP has filed a NITS service request to MISO with a potential service date of 6/1/20
- At the time GHBLP becomes a NITS customer, we anticipate dedicating to MISO our 69 kV assets to offset higher transmission charges and recover associated operating and capital costs