For convenience and a reasonable means to present the study results, ITC’s Michigan systems were assessed using 7 geographic regions (found on slide 6). For each region, a defined number of new generator resources were interconnected at existing substations to assess the capabilities of the system (also found on slide 6).

The results, found on slides 8 – 14, represented two different system analysis. The “Top 5 highest individual capacities” represents the capability of the transmission system when power is injected at only one of the defined points of interconnection in a single region before major system upgrades are required (each point is assessed independently).

The “Region Indicative Capacities and Costs” are reflective of the capabilities of the geographic region more holistically. The regions are tested by ramping up the prospective generation units in a region and identifying the major system upgrades required to achieve the targeted injection level (i.e. transfer).

Model Build and Approach
- Analysis for 2025 Summer Peak
  - All MTEP20 approved projects
- 225 points of interconnections examined
  - Existing >100kV stations with 3 or more transmission line connections
- Transfers studied at selected stations up to:
  - 1,000 MW for 120kV, 138kV and 230kV
  - 3,500 MW for 345kV
• The system network upgrade costs developed are indicative estimates for major system-upgrades (including conductors and/or transformers) from steady-state analysis only. The costs do not include any interconnection facilities (i.e. direct assign or network upgrades) that may be identified (The next slide provides a visual representation). Actual interconnection facilities and NRIS/ERIS network upgrade costs for new generators connected to the ITC & METC systems must be determined by completing the MISO and ITC interconnection process.

• The analysis was performed prior to recently submitted Consumers Energy Integrated Resource Plan (CE IRP). Proposals in the CE IRP, or other major system changes, could alter findings and result in different levels of expected capacity and indicative costs.
EXCLUDED VS INCLUDED INDICATIVE COSTS

These Types of Interconnection Facility (Direct Assign and Network Upgrade) Costs are **EXCLUDED** in Analysis Indicative Costs.

These Types of Network Upgrade (NRIS/ERIS) Costs are **INCLUDED** in Analysis Indicative Costs.

- New Interconnection Station
- Existing Station With Interconnection & Network Upgrades
- New Line Split/Tap
- Major System Network Upgrade (e.g. New Line)
### MICHIGAN STUDY REGIONS

<table>
<thead>
<tr>
<th>Region</th>
<th>345 kV</th>
<th>138 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Michigan</td>
<td>4 stations</td>
<td>23 stations</td>
</tr>
<tr>
<td>Midland</td>
<td>6 stations</td>
<td>23 stations</td>
</tr>
<tr>
<td>Central</td>
<td>10 stations</td>
<td>21 stations</td>
</tr>
<tr>
<td>South</td>
<td>6 stations</td>
<td>21 stations</td>
</tr>
<tr>
<td>Thumb</td>
<td>8 stations</td>
<td>11 stations</td>
</tr>
<tr>
<td>Oakland</td>
<td>14 stations</td>
<td>1 station</td>
</tr>
<tr>
<td>Wayne</td>
<td>10 stations</td>
<td>5 stations</td>
</tr>
<tr>
<td></td>
<td>230 kV</td>
<td>44 stations</td>
</tr>
<tr>
<td></td>
<td>138 kV</td>
<td>18 stations</td>
</tr>
</tbody>
</table>
Available capacity in the system is shared…
• within each region and…
• across each of the Michigan regions.
…therefore, indicative capacity is not cumulative

EXAMPLE (Hypothetical): 500MW new generation interconnects at South location S1 resulting in…
• S2 and S3 future capacity decreasing
• C1, C2, M1 and M2 future capacity decreasing
Top 5 highest individual capacities

1. LUDINGTON 138KV: 750MW (HIGHEST)
2. LIVINGSTON 345KV: 550MW
3. KEYSTONE 345KV: 500MW
4. KEYSTONE 138KV: 450MW
5. LIVINGSTON 138KV: 345KV

Region Indicative Capacities & Costs*

- $1B
- $800M
- $600M
- $400M
- $200M
- $2000MW
- $3000MW
- $4000MW
- $5000MW

*Costs are subject to previous disclaimer
Top 5 highest individual capacities

- **MURPHY 138KV**: 750MW
- **KARN 138KV**: 750MW
- **MANNING 138KV**: 800MW
- **HAMPTON 345KV**: 1850MW
- **THETFORD 345KV**: 2900MW (HIGHEST)

Region Indicative Capacities & Costs*

*Costs are subject to previous disclaimer*
CENTRAL REGION

Top 5 highest individual capacities

| #3 | ROOSEVELT 345KV | 1350MW |
| #3 | KENOWA 345KV   | 1350MW |
| #3 | NELSON RD 345KV | 1350MW |
| #2 | TALLMADGE 345KV | 1600MW |
| #1 | MEYER 345KV     | 1650MW |

Region Indicative Capacities & Costs*

- $100M
- $80M
- $60M
- $40M
- $20M

*Costs are subject to previous disclaimer
Top 5 highest individual capacities

#5 TOMPKINS 345KV 921MW
#4 TOMPKINS 138KV 1270MW
#3 ARGENTA 138KV 2191MW
#2 PALISADES 345KV 3500MW (HIGHEST)
#1 ARGENTA 345KV 3458MW

Region Indicative Capacities & Costs*

$5M
$20M
$40M
$60M
$80M
$100M

2000MW 3000MW 4000MW 5000MW

*Costs are subject to previous disclaimer
Top 5 highest individual capacities:

- **#1**: RAPSON 345KV, 2450MW (HIGHEST)
- **#2**: FITZ 345KV, 2400MW
- **#3**: GREENWOOD 345KV, 1650MW
- **#4**: RAPSON 120KV, 1600MW
- **#5**: GRASSMERE 345KV, 900MW

Region Indicative Capacities & Costs:

- $1B
- $800M
- $600M
- $400M
- $200M
- $525M

*Costs are subject to previous disclaimer*
**Top 5 highest individual capacities**

1. **PLACID 345KV** 1950MW
2. **BISMARCK 345KV** 2000MW
3. **STEPHENS 345KV** 2050MW
4. **PONTIAC 345KV** 2550MW
5. **JEWEL 345KV** 2550MW

*HIGHEST*

90MW

*LOWEST*

**Region Indicative Capacities & Costs**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000MW</td>
<td>$100M</td>
</tr>
<tr>
<td>3000MW</td>
<td>$200M</td>
</tr>
<tr>
<td>4000MW</td>
<td>$300M</td>
</tr>
<tr>
<td>5000MW</td>
<td>$400M</td>
</tr>
</tbody>
</table>

*Costs are subject to previous disclaimer*
Top 5 highest individual capacities

<table>
<thead>
<tr>
<th>#</th>
<th>Region</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>MAJESTIC 345KV</td>
<td>2500MW</td>
</tr>
<tr>
<td>#2</td>
<td>WAYNE 138KV</td>
<td>1600MW</td>
</tr>
<tr>
<td>#3</td>
<td>LULU 138KV</td>
<td>1550MW</td>
</tr>
<tr>
<td>#4</td>
<td>MONROE 345KV</td>
<td>1400MW</td>
</tr>
<tr>
<td>#5</td>
<td>BROWNSTOWN S. 345KV</td>
<td>1300MW</td>
</tr>
</tbody>
</table>

Region Indicative Capacities & Costs*

- $100M
- $80M
- $60M
- $40M
- $20M
- $5M

*Costs are subject to previous disclaimer
Partners in Business

The Host Capacity Study will be presented at the partners in business meeting on October 19, 2021.