



For the Greater Grid

Welcome!

**ITC Midwest Transmission
Investments Benefit Analysis**

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For the Greater Grid

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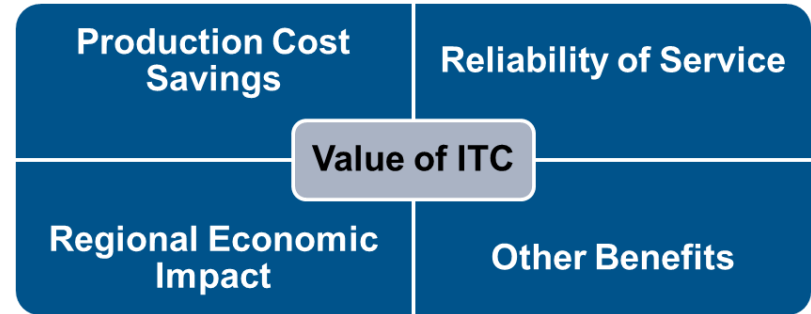
Providing Value

2016 Study

In 2016 ITC conducted initial exercise to identify and quantify value its investments and operations have brought to service territories. The 2016 study focused on:

- Projects that would not have been built “but for” ITC
- Projects between 2008 and 2014

2019 Study



The 2019 study focused on:

- All ITC Investments
- Additional ways to quantify value
- Projects between 2008 and 2017

Providing Value – ITC Midwest

Examined projects sorted by five categories:

- **Aging Infrastructure:** Replacing assets that are past useful life
- **Congestion/economic:** Projects that relieve congestion and improve generation efficiency
- **Multi-Value Projects:** Projects provide multiple benefits
- **Reliability Projects:** Projects ensure system compliance with applicable reliability standards
- **34.5 kV Rebuilds:** Projects to support upgrades to 69 kV

Nearly 340 projects with \$2.9 billion investment during study period

Providing Value – ITC Midwest

Examined value in four areas:

- **Lower electricity costs**
- **Improved reliability**
- **Increased economic activity**
- **Increased tax revenues**

Providing Value – ITC Midwest



\$1.1 Billion

Lower
Electricity Costs



\$1.6 Billion

Improved
Reliability of Service



\$2.0 Billion

Increased
Economic Activity



\$430 Million

Increased
Tax Revenues

**Total ITC
Midwest
investments
of \$2.9 billion
yielded
\$5.2 billion in
benefits**

ICF Study Period: 2008 - 2017

Lower Electricity Costs

Production Cost Savings – derived from the ability to use generation more efficiently as a result of ITC's transmission projects

- **Reduced congestion** – Energy cost savings due to reduced congestion and access to more efficient sources
- **Efficient energy dispatch** – Reduced fuel cost due to more efficient generation in place of relatively more expensive units
- **Reduced losses** – Reduced transmission system losses due to more efficient generation dispatch

Lower Electricity Costs

Production Cost Savings

- ICF analyzed system operations and production costs in MISO and SPP if ITC projects were not built
- Used the ABB PROMOD to simulate operations of the MISO and SPP markets in two cases
 - **ITC Case:** A baseline case representative of the current system with ITC's projects
 - **Non-ITC Case:** A change case with ITC projects taken out of service

Lower Electricity Costs

Production Cost Savings

- ICF also looked at ITC's approach to generation interconnections
 - Approximately 3,288 MW of generation interconnection enabled in ITC Midwest
 - 2,647 MW of wind
 - 641 MW of other generation
 - ITC works cooperatively with developers to identify the best solutions for interconnections
 - Customers have attested to ITC's willingness to meet developer's schedules

Providing Value – ITC Midwest



\$1.1 Billion

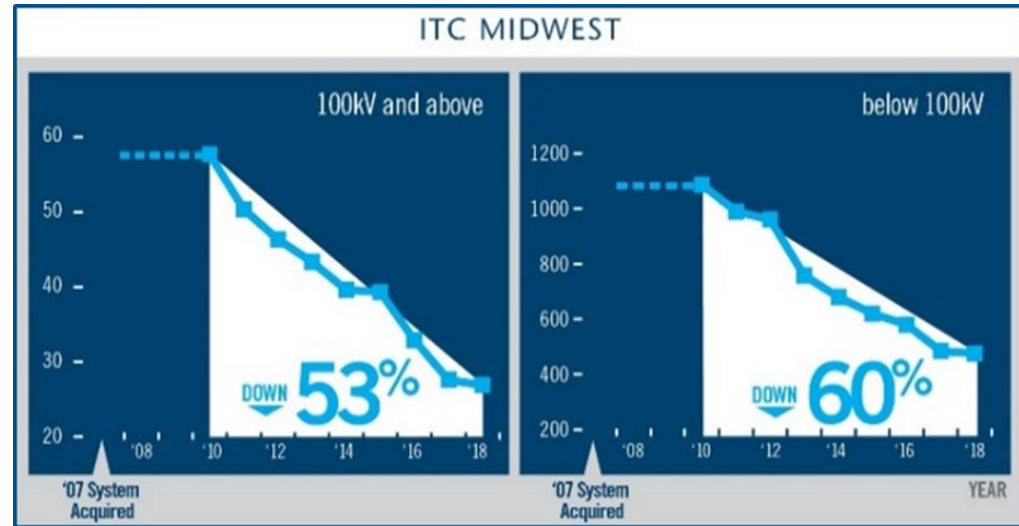
**Lower
Electricity Costs**

- Corporately, ITC projects enabled direct interconnection of more than 5 GW of wind generation
- ITC projects improved market efficiencies by using generating sources more efficiently and reducing costs to produce and deliver power

ICF Study Period: 2008 - 2017

Improved Reliability

- ITC's transmission systems routinely perform in the top tier nationally for reliability
- ITC implements proactive system improvements to reduce outage frequency and duration
- Program to rebuild and convert 34.5 kV lines to 69 kV network has significantly reduced outages



Improved Reliability

Two categories of reliability studied:

- **Baseline Reliability:** projects necessary to keep the transmission system operational, safe and reliable
 - Assumes reliability benefits are at least equal to the cost of investments. (Conservative approach)
- **Reduced Outages and Load Curtailment (34.5 kV improvements)**
 - Expected Unserved Energy (EUE)/Value of Lost Load (VoLL)
 - EUE is based on frequency, duration and size of load curtailed
 - VoLL is value of electricity to customers, estimating what they would pay to avoid an outage

Improved Reliability

Present Value Benefits (2019\$M)

34.5 kV Rebuild/Conversion – Momentary Outages	\$322
34.5 kV Rebuild/Conversion – Sustained Outages	\$214
Baseline Reliability Projects	\$1,080
Total	\$1,616

Providing Value – ITC Midwest



\$1.6 Billion Improved Reliability of Service

- ITC projects have documented significant improvements in reliability since system acquisition - ~60% reduction in transmission outages in ITC Midwest
- ICF took a conservative approach based significantly on project cost, as well as unserved energy avoided

ICF Study Period: 2008 - 2017

Increased Economic Activity

Data Sources and Models

- **ICF input data sources**
 - **Historical ITC capital expenditure (CapEx) and operating and maintenance (O&M)**
 - **Spending and information from the MISO Transmission Expansion Plan (MTEP)**
- **Used National Renewable Energy Laboratory (NREL) Jobs and Economic Development Impact (JEDI) model to categorize utility investments into details needed for economic modeling**
- **The IMPLAN model was used to quantify the economic impacts**

Increased Economic Activity

Summary of ITC Midwest CapEx Investments

Iowa	\$2.42 billion
Illinois	\$87 million
Minnesota	\$390 million
Total	- \$2.9 billion

This includes electrical equipment, construction, professional services, wires, wood, steel, concrete, real estate and insurance

Increased Economic Activity

**Over the past decade,
ITC Midwest's investments
have supported nearly
23,000 job years.**

Year	ITCMW
2008	1,512
2009	1,393
2010	2,102
2011	2,465
2012	2,643
2013	2,382
2014	2,272
2015	2,815
2016	2,409
2017	2,914
Total (Job-Years)	22,907

Increased Economic Activity

Economic Impacts for ITC Midwest

CapEx Value Added Impacts - \$1.743 billion

O&M Value Added Impacts - \$ 303 million

Total Economic Impact - \$2.046 billion

Providing Value – ITC Midwest



\$2.0 Billion Increased Economic Activity

- The labor, supply chain expenditures and other expenses to build ITC projects have a significant positive impact on local spending and job creation.
- ITC Midwest projects supported 23,000 job-years over the study period, or roughly 2,300 jobs per year

ICF Study Period: 2008 - 2017

Increased Tax Revenues

Summary of ITC Midwest tax impacts (\$ million):

	Federal	Local	Total
Iowa	\$204.86	\$115.42	\$320.28
Illinois	\$ 26.31	\$ 14.44	\$ 40.75
Minnesota	\$ 46.03	\$ 25.42	\$ 71.44

**Total - \$432.47 million,
\$155.24 million in-states**

Providing Value – ITC Midwest



Increased **\$430 Million** Tax Revenues

- Investments and improved taxable value of equipment, property, etc., generated federal, state and local tax payments for both ITC investments directly and resulting tax payments from others (not including generators)

ICF Study Period: 2008 - 2017

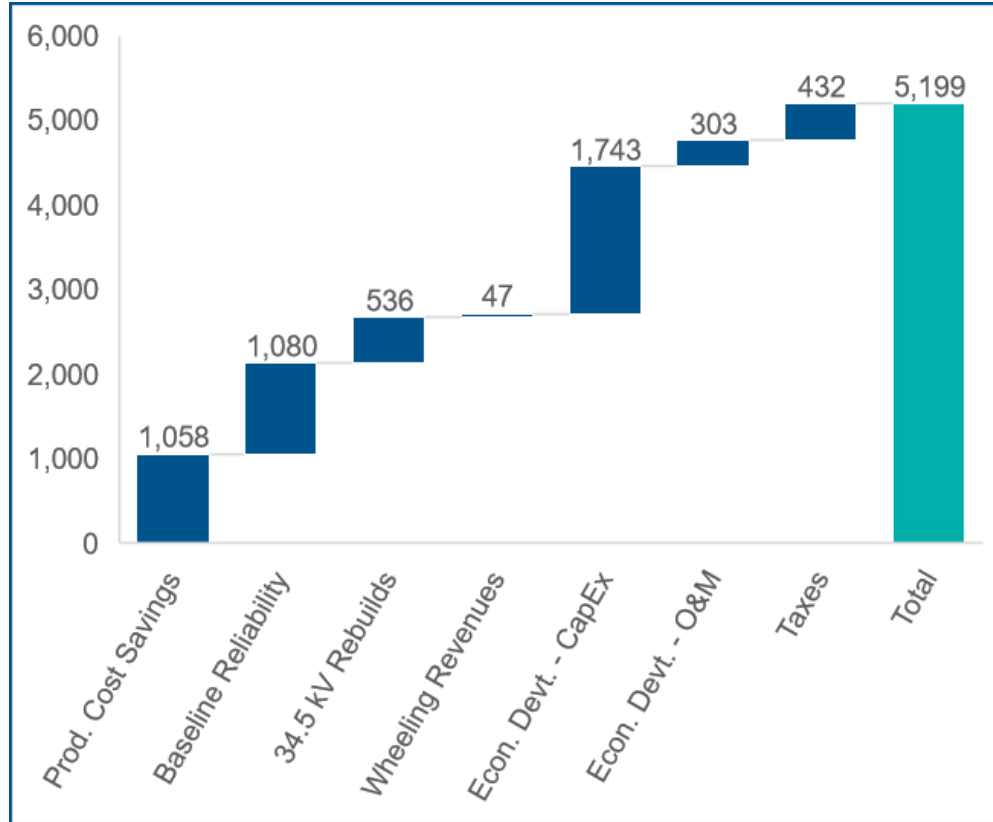
Summary of Benefits – ITC Midwest

Benefits to ITCMW Customers (2019\$ Millions)

Benefits in savings and gross economic output to customers in the ITC Midwest service territory: ~ \$5.2B

Many benefits continue to accrue to customers over the service life of the projects

In addition, 23,000 job-years were supported in ITC Midwest from CapEx and O&M investments



Providing Value – ITC Midwest



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Questions?

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