



Investment Benefit Analysis

Final Report

January 2020

Prepared for: ITC Holdings

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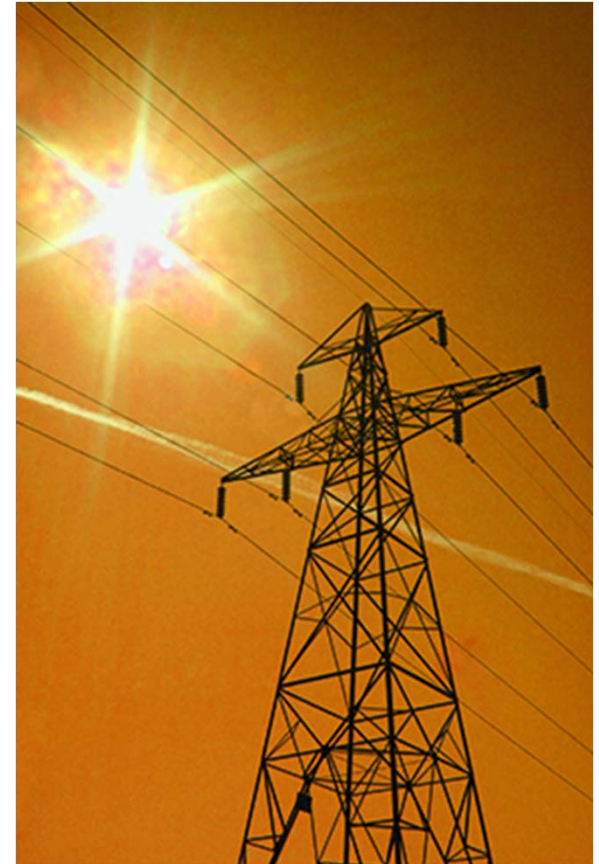
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Glossary

APC – Adjusted Production Cost

CapEx – Capital Expenditure

GSP – Gross State Product

HVE – High Voltage Equipment

HVL – High Voltage Line

IMPLAN – Impacts for Planning model

ITC – ITC Holdings Corp.

ITCMW – ITC Midwest

ITCT – ITC *Transmission*

ITCGP – ITC Great Plains

Job-year – Generally similar to the 2,080-hour full-time equivalent job for most sectors/industries

JEDI – Jobs and Economic Development Impact model

Labor Income – Wages and benefits for workers plus proprietor's income

LVE – Low Voltage Equipment

LVL – Low Voltage Line





Glossary

METC – Michigan Electric Transmission Company

MISO – Midcontinent Independent System Operator

MTEP – MISO Transmission Expansion Plan

MVP – Multi-Value Project

NREL – National Renewable Energy Laboratory

PV – Present Value

O&M – Operations and Maintenance

SAIDI – System Average Interruption Duration Index

SPP – Southwest Power Pool

RMR – Reliability Must Run

Tax Revenues – Federal and state and local taxes on employee compensation, proprietor income, production and imports, households, and corporations

Value added –The incremental value generated by a particular sector to the total market value of a product or service; the sector's contribution to GSP



Introduction and Study Overview



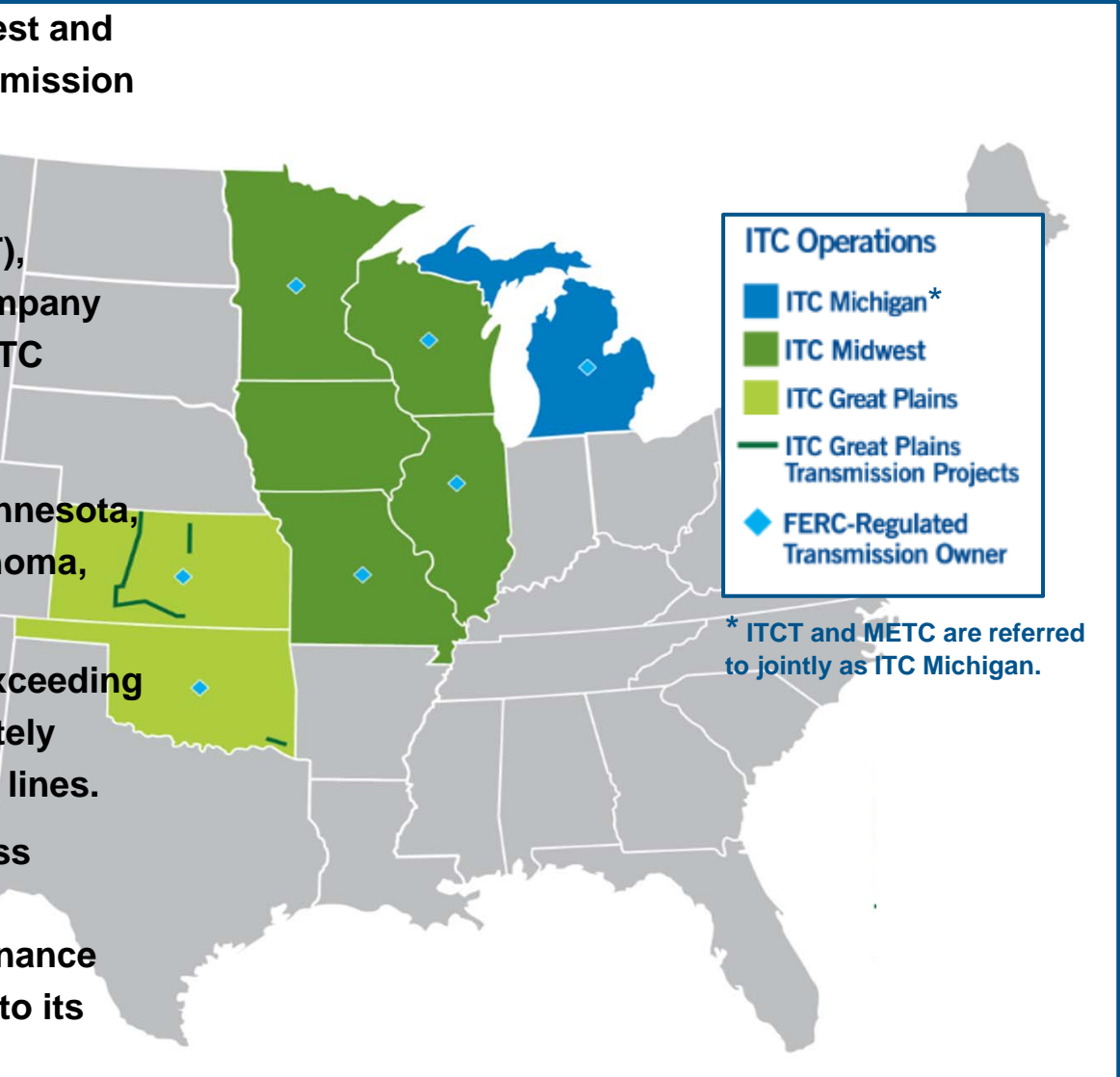
Project Background

ITC Holdings Corp. (ITC) is the largest and first fully independent electric transmission company in the United States.

Through its regulated operating subsidiaries ITC *Transmission* (ITCT), Michigan Electric Transmission Company (METC), ITC Midwest (ITCMW) and ITC Great Plains (ITCGP), ITC owns and operates high-voltage transmission infrastructure in Michigan, Iowa, Minnesota, Illinois, Missouri, Kansas and Oklahoma, and in development in Wisconsin.

ITC serves a combined peak load exceeding 26,000 megawatts along approximately 16,000 circuit miles of transmission lines.

ITC has developed a unique business model, specializing in transmission investment, operations, and maintenance which provides significant benefits to its customers and other stakeholders.





The Value of Transmission

The high voltage electric transmission system is essential to our society. It links users of electric power to supply sources that meet their diverse needs. Because it is the most efficient way to move power reliably to consumers, it enables users to access power cost-effectively from generators that are located close to the fuel sources in diverse locations. This has been essential in meeting clean energy goals.

The transmission grid has kept pace with the changing needs of consumers, supporting periods of rapid growth in the demand for electricity and evolving to meet the need for a rapidly changing mix of supply sources under more modest demand growth. This will become even more important in the future as the need for clean energy continues to grow and power is sourced from widespread geographic areas.

The total value of transmission is difficult to quantify, but various assessments show a high ratio of customer benefits to project costs. These benefits will continue to grow as society becomes even more dependent on transmission.

In the Midwest, ITC has played a critical role in ensuring the availability of a reliable network that meets all the demands of customers. Unlike traditional utilities, ITC focuses only on transmission and it is independent from market participants. ITC therefore views the needs of the electric grid and its customers from a unique, holistic perspective. Its singular focus on transmission allows it to respond rapidly to market signals indicating when and where transmission is needed. This has translated into billions of dollars in benefits to its customers. ICF calculated that the value to ITC's customers was over a billion dollars annually between 2008 and 2017.



Scope of Study

In 2016 ITC conducted an initial exercise to identify and quantify the value that its investments and operations have brought to its service territories.

The 2016 study focused on:

- Projects that would not have been developed “but for” ITC. These were projects that were implemented as a result of ITC’s unique approach to planning and operation and would otherwise not have been developed if another utility owned the service territory.
- The 2008 to 2014 study period was chosen because it was determined the data required for the study was primarily available after 2007.

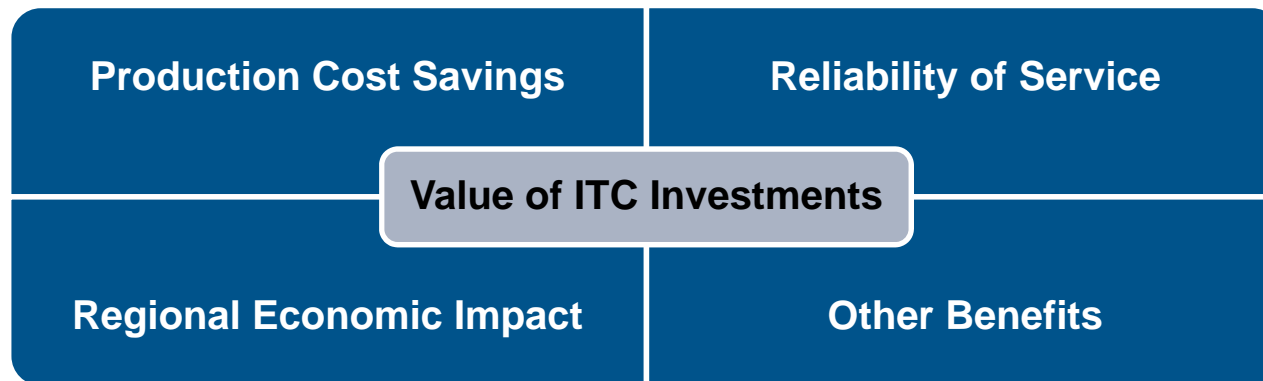
This new study updates and expands on the scope of the 2016 study:

- The new study covers the study period 2008 to 2017.
- It includes all ITC investments and not just the “but for” projects.

Description	Previous Study	Current Study
Study Period	2008 to 2014	2008 to 2017
Projects in Scope	“But for” ITC	All ITC investments
Regional Economic Benefits	Limited review of third-party studies	Evaluation of actual benefits including economic modeling



Categories of Benefits Examined



ICF analyzed and quantified four major categories of benefits, as shown in the figure.

ITC's investments provide other benefits that are not easily quantified. Some were addressed qualitatively.

Individual projects could provide multiple benefits. For example, a transmission line built to address reliability needs could also provide congestion relief and thus provide production cost savings. ICF's approach avoids double-counting benefits.

Projects were placed into five groups for the analysis:

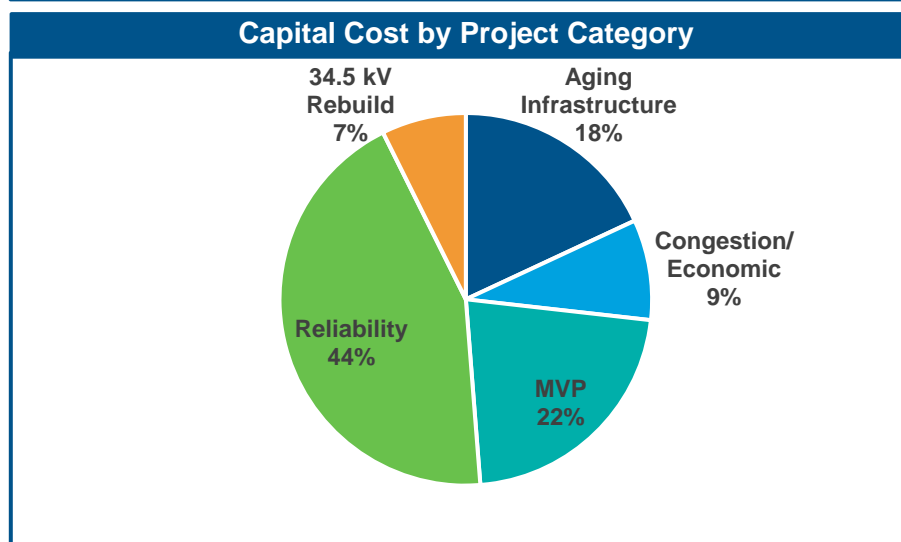
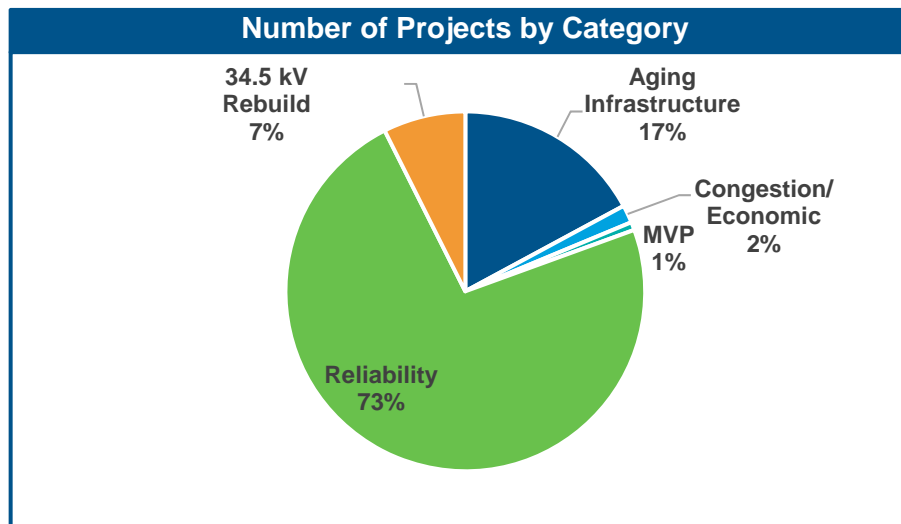
- **Aging Infrastructure.** Projects required to replace assets that are past their useful life.
- **Congestion/Economic.** Projects that relieve congestion and improve generation efficiency.
- **Multi-Value Projects (MVP).** Projects that provide multiple categories of benefits.
- **Baseline Reliability (Reliability).** These ensure that the transmission system complies with applicable reliability standards.
- **34.5 kV Rebuilds/Conversion.** Program to rebuild and convert low voltage (34.5 kV) lines to higher voltage to improve reliability of service.

Cost information is in nominal dollars unless otherwise stated.



Overview of ITC Investments by Project Category

Company/Category	No. of Projects	Cost (\$M) ¹
ITCMW	338	\$3,353
Aging Infrastructure	72	610
Congestion/Economic	1	108
Multi-Value Projects (MVPs)	4	989
Reliability	210	1,145
34.5 kV Rebuild/Conversion	51	501
ITCT	143	\$1,386
Aging Infrastructure	16	112
Congestion/Economic	1	0.11
Multi-Value Projects (MVPs)	1	510
Reliability	125	763
METC	198	\$1,538
Aging Infrastructure	30	511
Reliability	168	1,027
ITCGP	10	\$518
Congestion/Economic	9	487
Reliability	1	31
Total	689	\$6,794



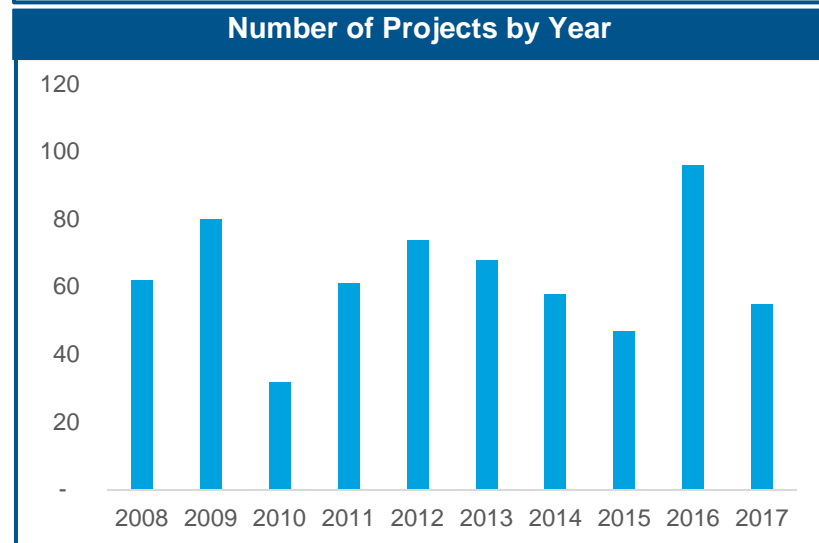
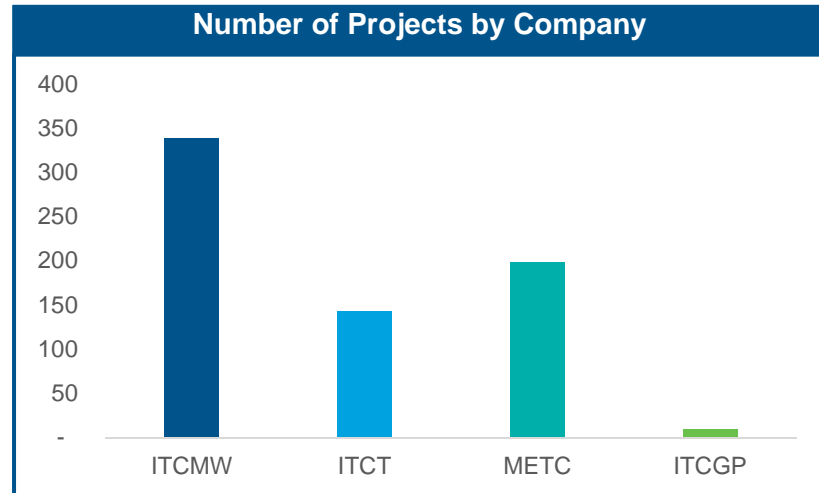
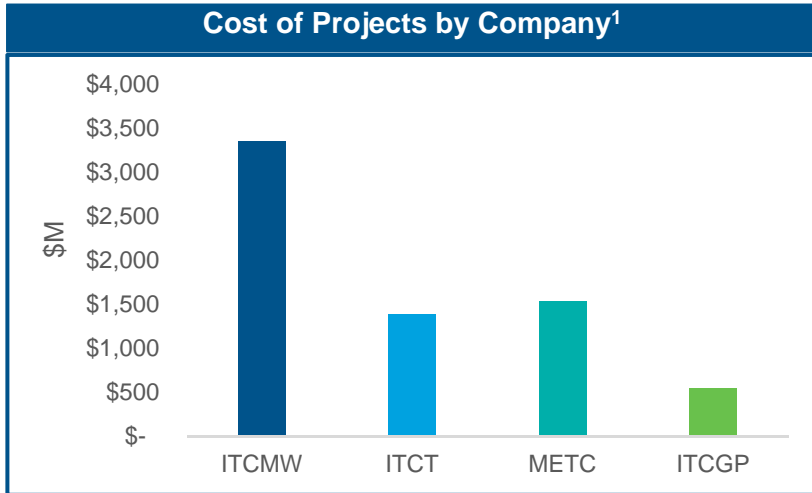
¹: Costs are MTEP planning-level costs and may be different from actual capital expenditure.

Source: MISO Transmission Expansion Plan (MTEP) Reports.





Overview of ITC Projects by Company



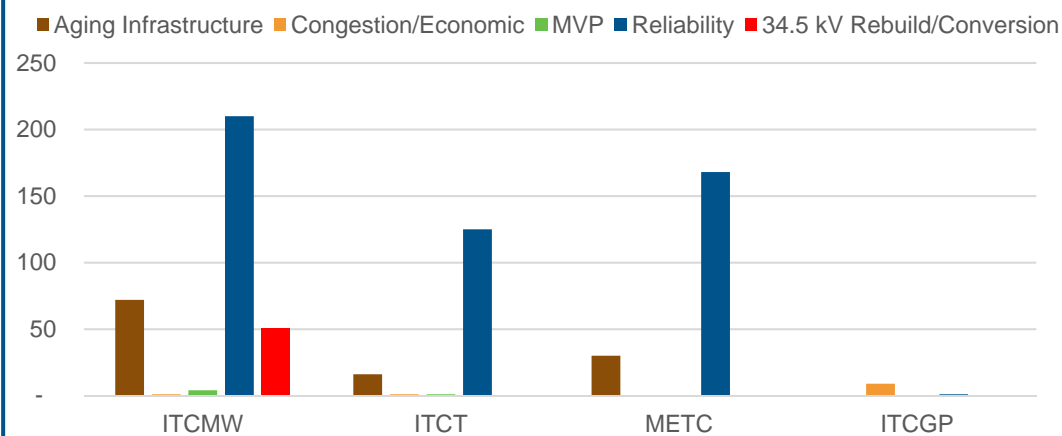
¹: Costs are MTEP planning-level costs and may be different from actual capital expenditure.

Source: MISO Transmission Expansion Plan (MTEP) Reports.

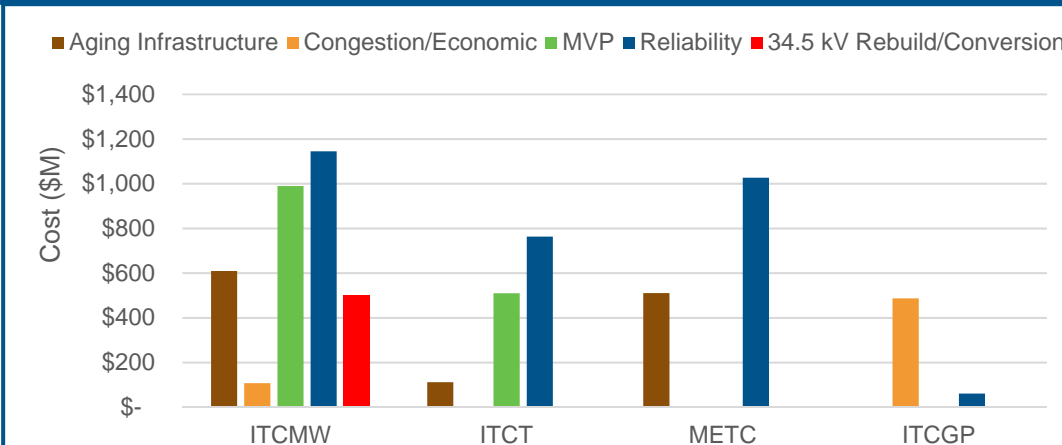


Overview of ITC Projects by Company and Category

Number of Projects by Company and Project Category



Cost by Company and Project Category



Project categorization is based on project planning information from MISO Transmission Expansion Plan (MTEP) and ITC’s project justification documents. Project cost and in-service dates might differ from actual.

Most of ITC’s investments are baseline reliability projects. These make up more than 70% of the projects, and more than 40% of the expenditure.

ITC also developed portions of five MVP projects.

All of the operating companies developed projects required to meet baseline reliability needs and provide congestion relief.

1: Costs are MTEP planning-level costs and may be different from actual capital expenditure.

Source: MISO Transmission Expansion Plan (MTEP) Reports.



Production Cost Savings



Overview





Production Cost Savings – Overview

Production cost savings are derived from the ability to use generation resources more efficiently as a result of ITC’s transmission projects. The added transmission capacity enables operators to increase dispatch from economic generation plants, which would otherwise have been limited.

#	Source of Benefit	Description	Assessed in Study
1	Efficient Generation Dispatch	Reduced fuel cost due to more efficient generation dispatch – economic generation which would otherwise have been limited can be used in place of relatively more expensive units	Yes
2	Reduced Losses	Reduced transmission losses due to more efficient generation dispatch	Yes
3	Reduced Congestion	Savings in the cost of energy due to reduced congestion	Yes
4	New Generation	Reduced cost of energy from more economic generation that might not have been built in the absence of the ITC projects	No (Insufficient Information)
5	Out-of-Market Solutions Avoided	Reduced cost of energy due to the elimination of out-of-market solutions, such as reliability must-run (RMR) generation or other operating procedures	No (Insufficient Information)



Production Cost Savings Evaluation Methodology

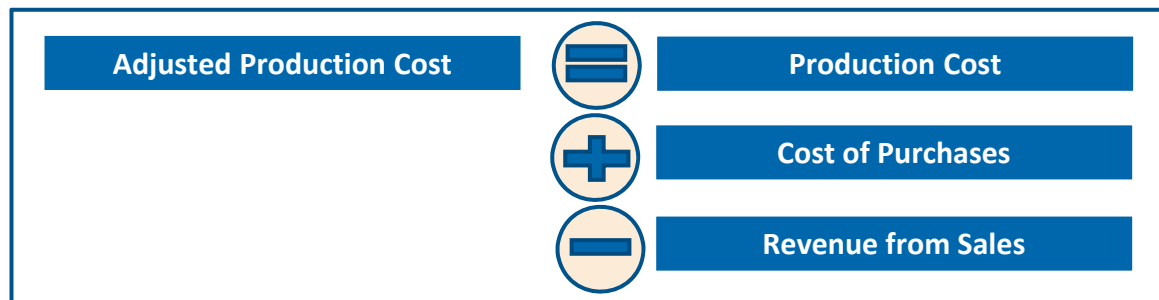
ICF analyzed how system operations and production costs in MISO and SPP would change if the ITC projects were not built.

ICF used the ABB PROMOD production cost model to simulate the operation of the MISO and SPP markets for two cases:

- **The ITC Case:** A baseline case representative of the current system with ITC's projects
- **The Non-ITC Case:** A change case with ITC projects taken out of service.

To account for the effect of energy interchange between MISO and SPP and their neighbors on the cost of energy, ICF used the Adjusted Production Cost (APC) in its calculations.

APC captures the purchases and sales of energy between neighboring systems. MISO and SPP use APC in their system planning studies.





Input Assumptions for Production Cost Analysis

To create the ITC Case and Non-ITC Case, ICF developed assumptions using 2008 to 2017 historical MISO and SPP market information.

Model Regions	Changes in definition of MISO and SPP regional definitions over the study period
Peak Demand	Peak demand assumptions by sub-region
Energy Demand	Energy demand assumptions by sub-region
Historical Gas Prices	Henry Hub and delivered gas prices for MISO and SPP regions
Historical Oil Prices	Historical oil prices for MISO and SPP regions
Historical Coal Prices	Historical coal prices for MISO and SPP regions
Existing Units	Existing generation units in MISO and SPP
Firm Builds	Description of operational and firm builds over the study period
Firm Retirements	Units retired over the study period
ITC Transmission Projects	ITC transmission projects in MISO and SPP (in-service by 2017)
Non-ITC Transmission Projects	Non-ITC transmission projects in MISO and SPP (in-service by 2017)
Tariff Rates	Historical firm and non-firm transmission rates for MISO and SPP load zones
SO₂ and NO_x Assumptions	SO₂ and NO_x regulations over the study period

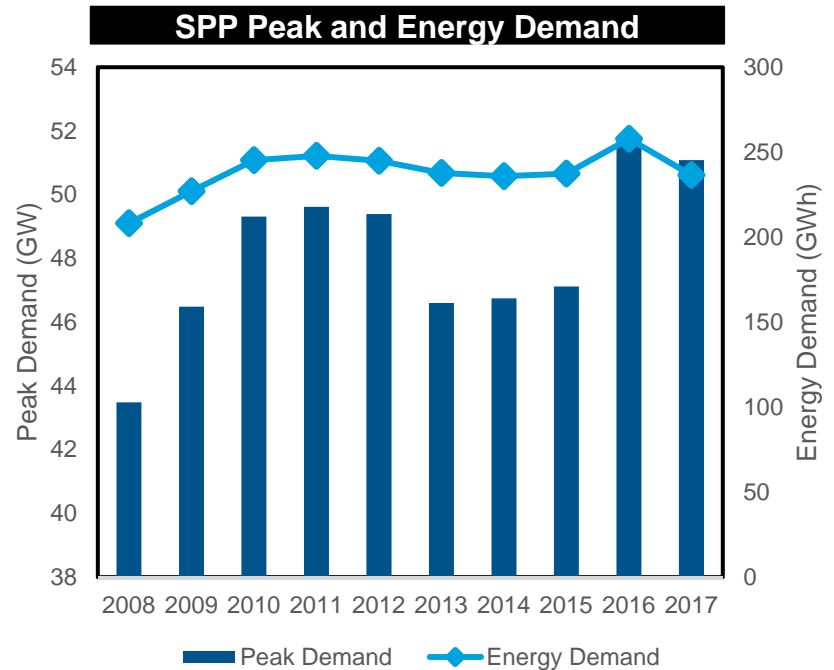
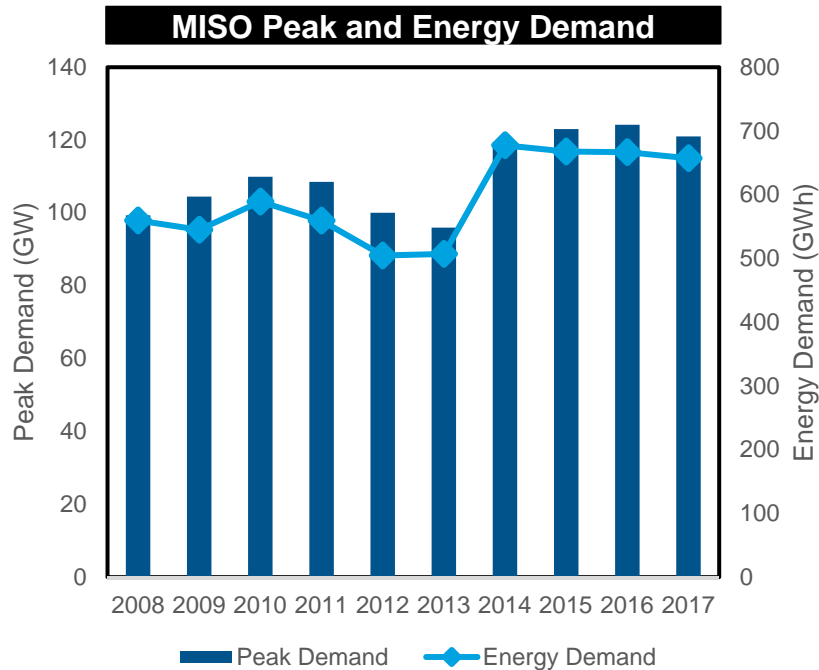




Key Assumptions



MISO and SPP Peak and Energy Demand Assumptions



MISO peak demand increased in 2014 with the integration of Entergy as MISO South.

MISO zonal designations also changed with the formation of MISO South.

SPP peak demand dipped in 2013, but energy consumption in non-summer months is higher than in 2011 and 2012, so energy demand remains almost flat.

Peak demand increases in 2016 with the addition of the Integrated System.

The Integrated System comprises Western Area Power Administration – Upper Great Plains in Billings, Mont.; the Basin Electric Power Cooperative in Bismarck, N.D.; and the Heartland Consumers Power District in Madison, S.D.

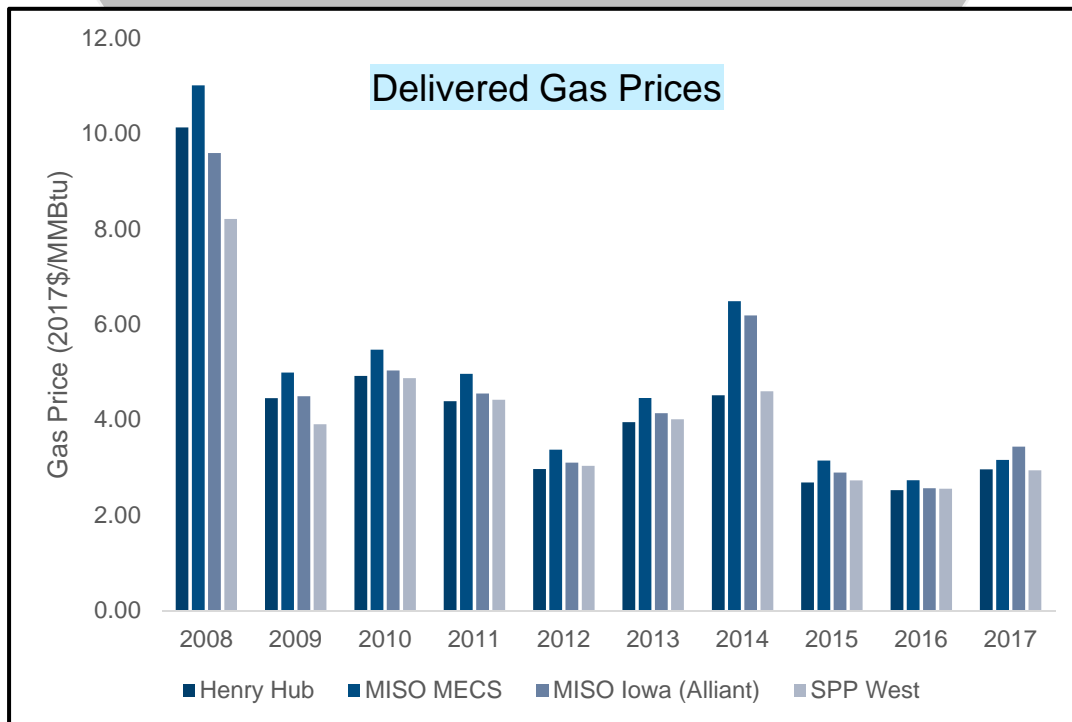
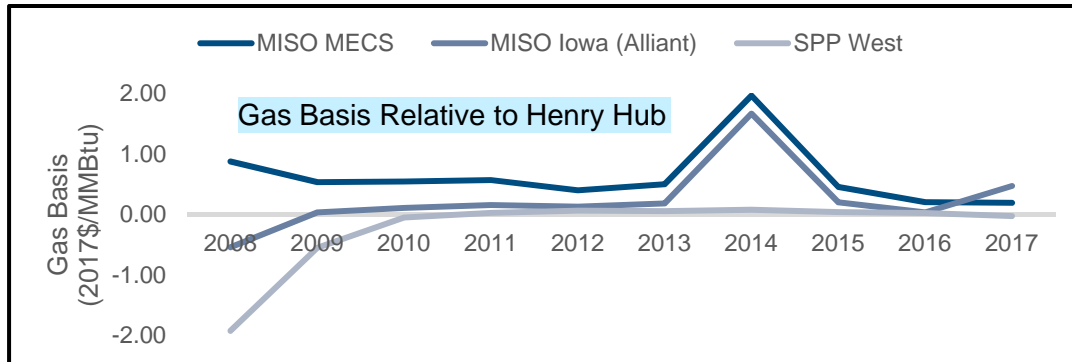
Source: MISO and SPP



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Historical Henry Hub and Delivered Gas Prices



- **Gas basis and delivered gas prices shown include local delivery charges (LDC) and taxes where applicable.**
- **MECS (Michigan) has a 6% tax. It is always at a premium to Henry Hub.**
- **Entergy North (Arkansas) is the only other area assumed to have a tax.**

Pricing Nodes	
MECS	MI Consolidated Citygates
Iowa (Alliant)	Northern, Ventura
SPP West	Oklahoma – CenterPoint East



Firm Generation Builds and Retirements by Fuel Type – 2008–2017

MISO Firm Builds										
Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Biomass	62					50				
Coal	558	388	1,932	634	1,624	618	92			
Gas	1,545	1,054	78	388	143	100	688		561	1,063
Oil					1					
Solar									162	155
Water									88	
Wind	2,929	1,636	659	1,633	2,132	300	869	1,231	1,464	448
Total	5,094	3,078	2,669	2,655	3,899	1,069	1,649	1,231	2,276	1,665

MISO Firm Retirements										
Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Biomass			63							
Coal		479	621	915	341	200	147	1,240	4,272	407
Gas	329	156	831	712	563	1,620	110	959	2,575	682
Oil			44	461	3	198	32	17	11	66
Uranium						574				
Wind								50		
Total	329	635	1,559	2,088	907	2,591	290	2,266	6,858	1,154

SPP Firm Builds										
Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Coal	91	664	1,046	912	609					
Gas	1,441	475	725	850	300	499	190	212	382	1,062
Solar				50				3	140	
Water						61				
Wind	615	997	749	763	2,513	795	1,303	2,284	3,189	2,015
Total	2,147	2,136	2,519	2,576	3,422	1,355	1,492	2,499	3,711	3,076

SPP Firm Retirements										
Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Coal								130	1,158	83
Gas		53	171		281		88	424	39	659
Other			39							
Uranium									478	
Total	53	210	281	88	554	1,675	742			

Source: ABB Velocity Suite



Generation Developed in ITC Territories



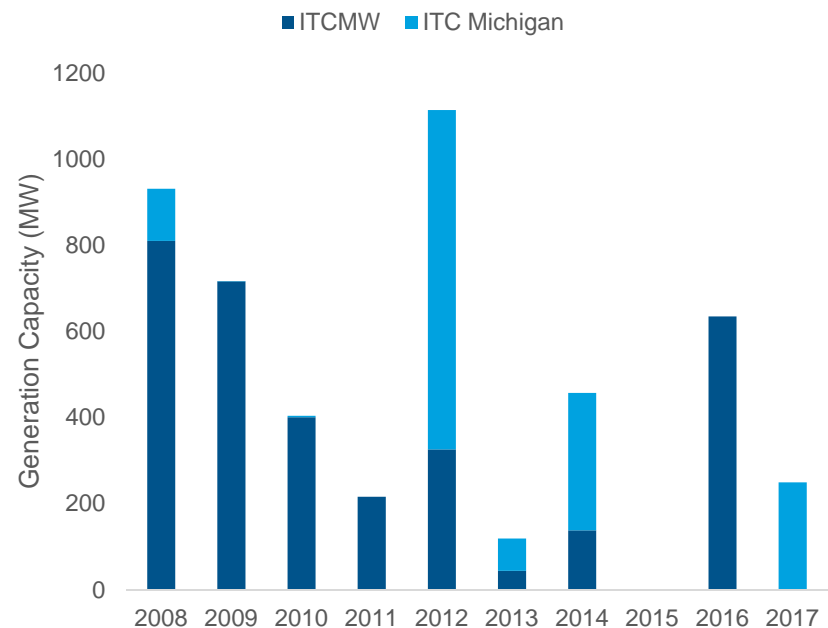
Between 2008 and 2017, ITC’s projects enabled interconnection of 1,539 MW of wind generation and 17 MW of other generation in ITCT and METC, represented by ITC Michigan in the figure.

Approximately 3,288 MW of generation interconnection was enabled in ITCMW, comprising 2,647 MW of wind and 641 MW of other generation.

ITC works cooperatively with developers to identify the best solutions for its interconnection customers. Customers have attested to ITC’s willingness to meet developer’s schedules, which better facilitates the interconnection process:

- <https://www.itc-holdings.com/our-customers/case-studies/nextera-energy>
- <https://www.itc-holdings.com/our-customers/case-studies/gratiot-county>

Generation Developed in ITCMW and ITC Michigan



To capture ITC’s positive impact on the interconnection process, ICF assumed ITC projects would improve the project development cycle in the ITC service areas and reduce lead time for wind plant development by two years.

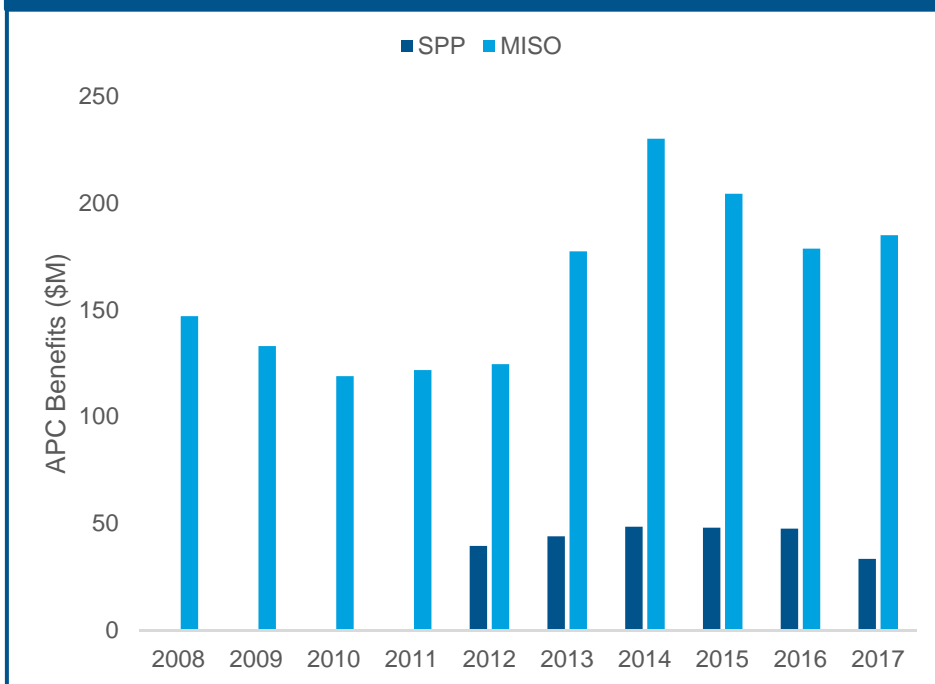
Results





Production Cost Savings in MISO and SPP

MISO and SPP Adjusted Production Cost Savings



Benefits from more efficient generation dispatch and reduced congestion were calculated as the APC savings in MISO and SPP.

MISO annual APC savings range from approximately \$120M in 2010 to approximately \$230M in 2014. The relatively higher benefits in 2014 are driven partly by the higher gas prices in that year.

Total MISO APC savings in ITC’s service territories for the 2008 to 2017 study period is approximately \$1.6B (2019\$).

In SPP, the first ITCGP project was placed in service in 2012.

Benefits in SPP range from approximately \$33M in 2017 to a high of approximately \$49M in 2014.

Total SPP APC savings over the 2012 to 2017 period is approximately \$274M (2019\$).

The benefits will continue to accrue to customers over the service life of the projects, which is typically 40 or more years.

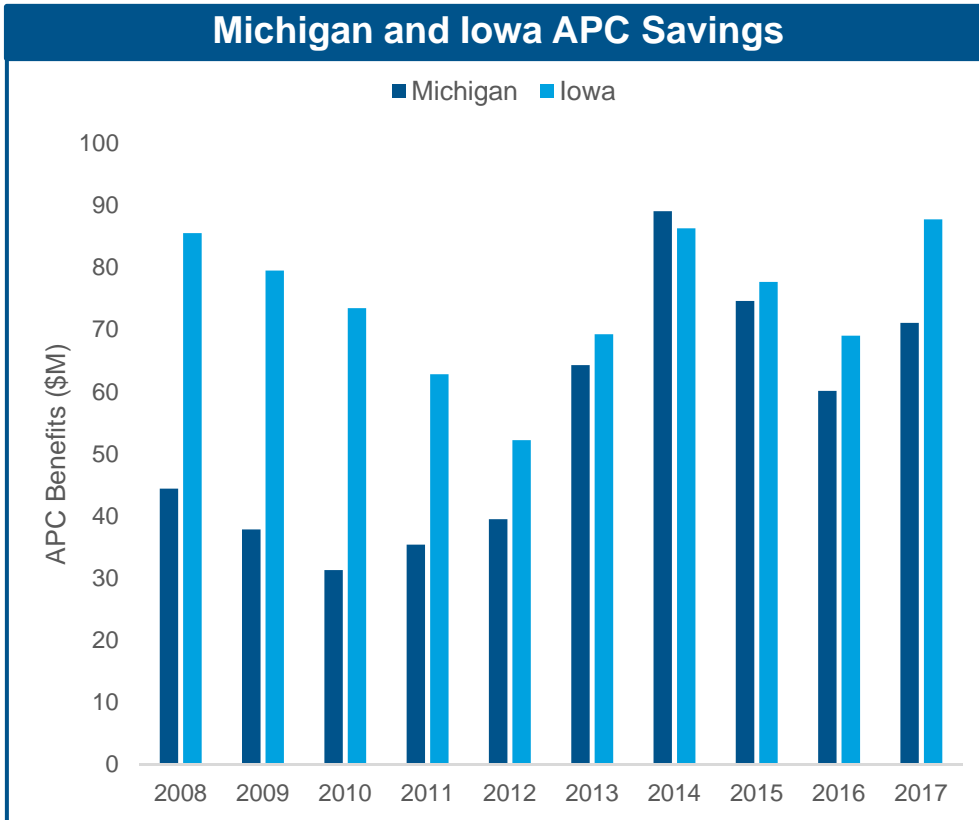
PV Benefits (2019\$ M)

MISO	1,645
SPP	274
Total	1,919





Production Cost Savings in Michigan and Iowa



ICF calculated APC savings for ITC’s service territories in Michigan and Iowa as indicative benefit allocations.

In Michigan, ITCT developed the Thumb Loop MVP, which was energized in stages between 2013 and 2015. ITCT and METC also developed dozens of baseline reliability and other projects.

ITC’s projects in Michigan enabled interconnection of 1,556 MW of generation. Most of this new generation capacity was wind, and the majority came online starting in 2012.

ITCMW developed portions of four MVPs. ITCMW also developed dozens of baseline reliability and other projects.

ITCMW’s projects enabled interconnection of 3,288 MW of new generation capacity, most of which was wind.

Total APC savings was \$587M in Michigan and \$806M in Iowa. The savings for ITCMW was \$1.06 billion. The benefits will continue to accrue to customers over the service life of the projects, which is typically 40 or more years.

PV Benefits (2019\$ M)

Michigan	587
Iowa	806
ITCMW	1,058



Reliability of Service



Overview

ITC's transmission systems routinely perform in the top tier of utilities nationally for service reliability. ITC implements proactive system improvements that reduce the frequency and duration of outages.

In its territory in the Midwest, ITC has implemented a program to rebuild and convert low voltage (34.5 kV) lines to a higher voltage (69 kV) network. This has significantly reduced outages on its low voltage network.

ITC also works with stakeholders to implement baseline reliability system improvements required to ensure that the transmission system is in compliance with applicable reliability standards.

As a result of these investments, ITC has steadily reduced the number of outages in its service territories and ITC has provided significant value in improved service to customers.

Categories of Reliability Benefits and Methodologies for Assessments

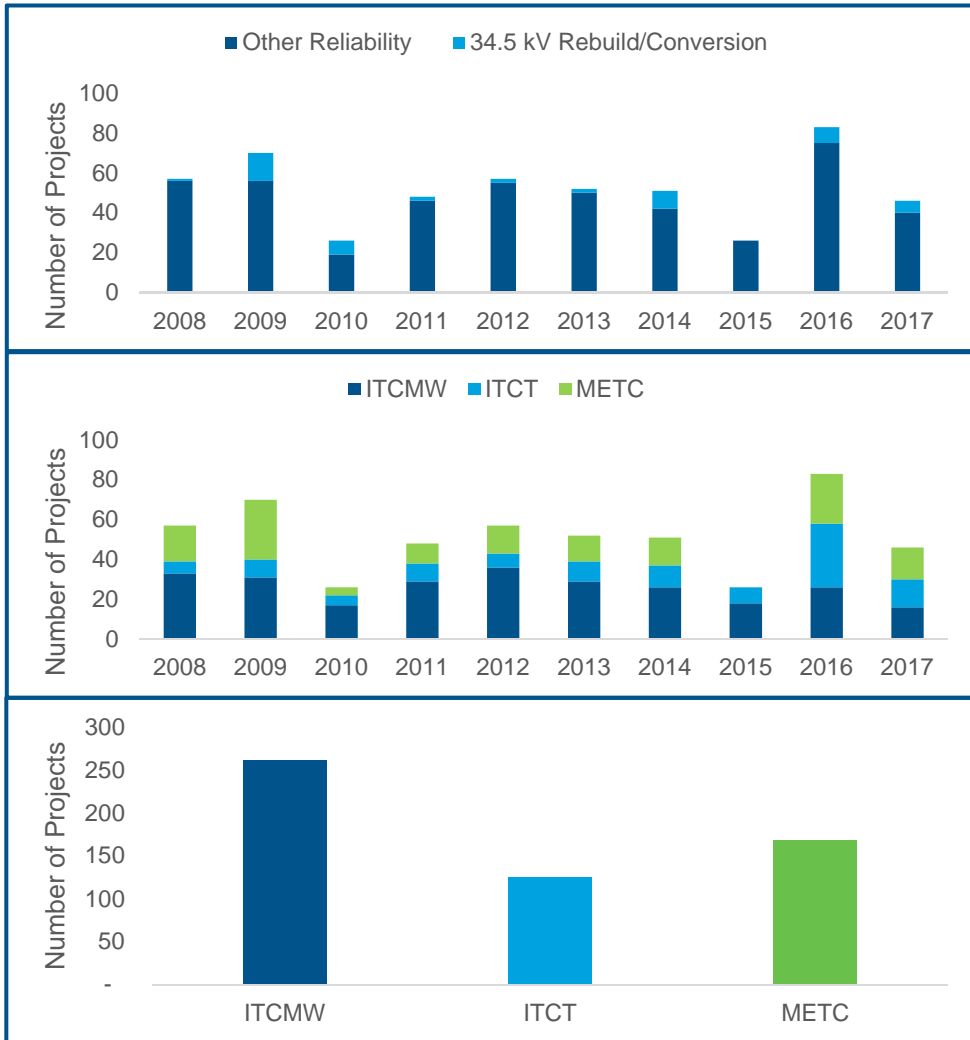
Reliability Benefit Category	Methodology	Brief Description	Assessed in Study
Baseline Reliability Projects	Simplified Approach: Benefit = Investment Cost	Simplified approach assumes reliability benefits are at least equal to the cost of projects. This is a conservative estimate because studies have shown that reliability benefits far exceed investment cost.	Yes
Reduced Reliability Must-Run (RMR) Generation and Operating Procedures	Production Cost Modeling (PROMOD) and Historical Information	Market efficiency aspects of the benefits were captured in the production cost modeling. Historical information examined for potential savings from elimination of any additional compensation to the RMR unit or for other system support.	No (Insufficient information)
Avoided or Deferred Upgrades	Present Value (PV) of Avoided Cost or Revenue Requirement	Calculated as the PV of the avoided cost of an alternative solution or the revenue requirement for the period a reliability solution is required.	No (Insufficient information)
Reduced Outages and Load Curtailment	Expected Unserved Energy (EUE) and Value of Lost Load (VoLL)	Cost of outages is calculated from EUE and VoLL. EUE is based on frequency, duration, and size of load curtailed. ITC projects reduce the cost of outages.	Yes (for 34.5kV Rebuild and Conversion program)
Outages to Specific Industrials	EUE and VoLL or cost of backup supply	Cost of outages is calculated from EUE and VoLL if no backup supply exists. Otherwise cost of backup supply used.	No (Insufficient information)

Assumptions





Summary of Reliability Projects



ICF assessed more than 500 projects implemented in the ITC service territories between 2008 and 2017.

Approximately 51 (or 10%) were 34.5 kV Rebuild/Conversion Projects and 465 (or 90%) were Baseline Reliability Projects.

All of the 34.5 kV Rebuild/Conversion Projects were in ITCMW. In all, approximately 261 projects (or 51%) were in ITCMW. This comprised 34.5 kV Rebuild/Conversion Projects and Baseline Reliability Projects.

Approximately 111 (or 22%) were ITCT projects, and 144 (or 28%) were METC projects. All of the Michigan projects were Baseline Reliability Projects.

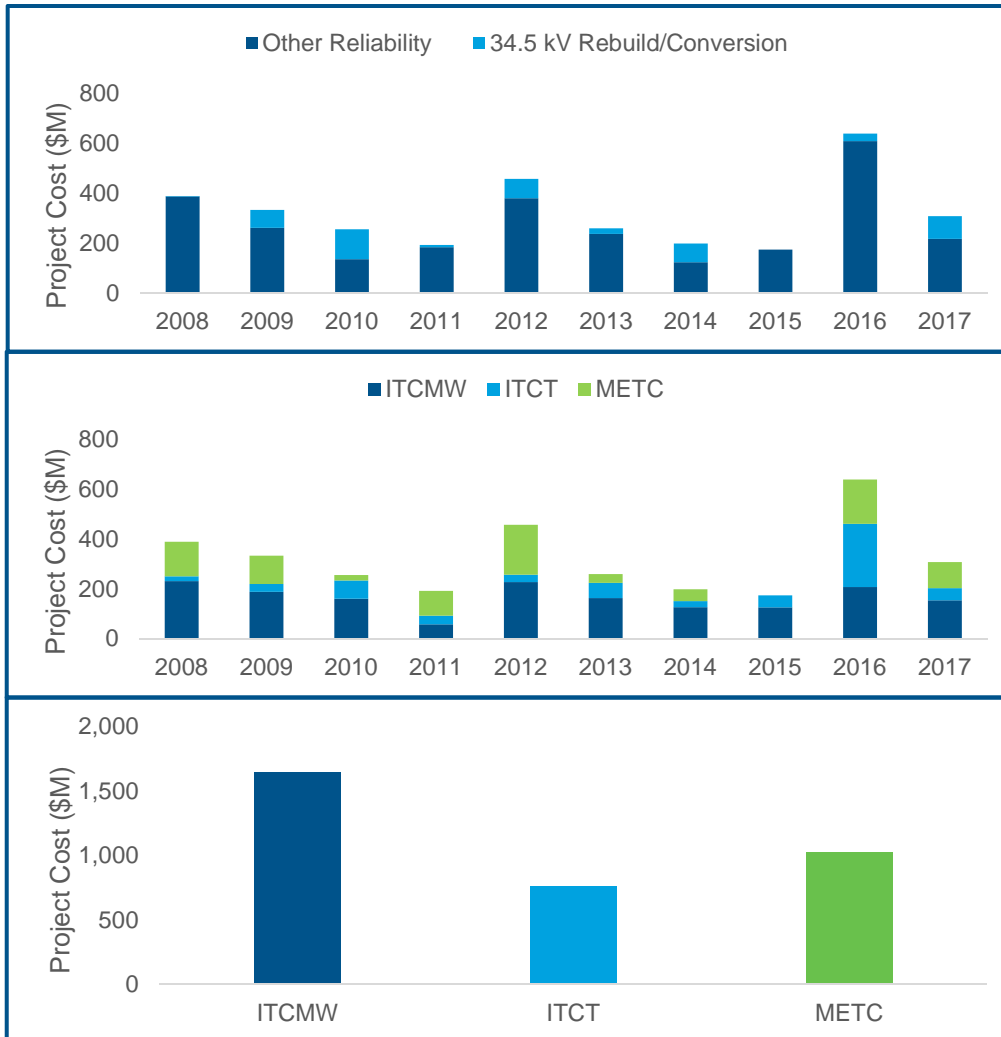
ITCGP built the northern portion of the 345 kV Elm Creek to Summit line in North-Central Kansas. SPP approved the line as a reliability project.

Source: MISO Transmission Expansion Plan (MTEP) Reports.





Investments in Reliability Projects



Total cost of the projects assessed for reliability benefits exceeded \$3.2B.

Cost of the 34.5kV Rebuild/Conversion Projects was approximately \$0.5B (or 16%) of the total cost, and cost of Baseline Reliability Projects was \$2.7B (or 84%).

Cost of projects in ITCMW was \$1.6B (or 51%) of the total. ITCT and METC had \$0.6B (or 19%) and \$0.9B (or 29%), respectively.

ITCGP's cost for its portion of the 345 kV Elm Creek to Summit line was over \$30M.

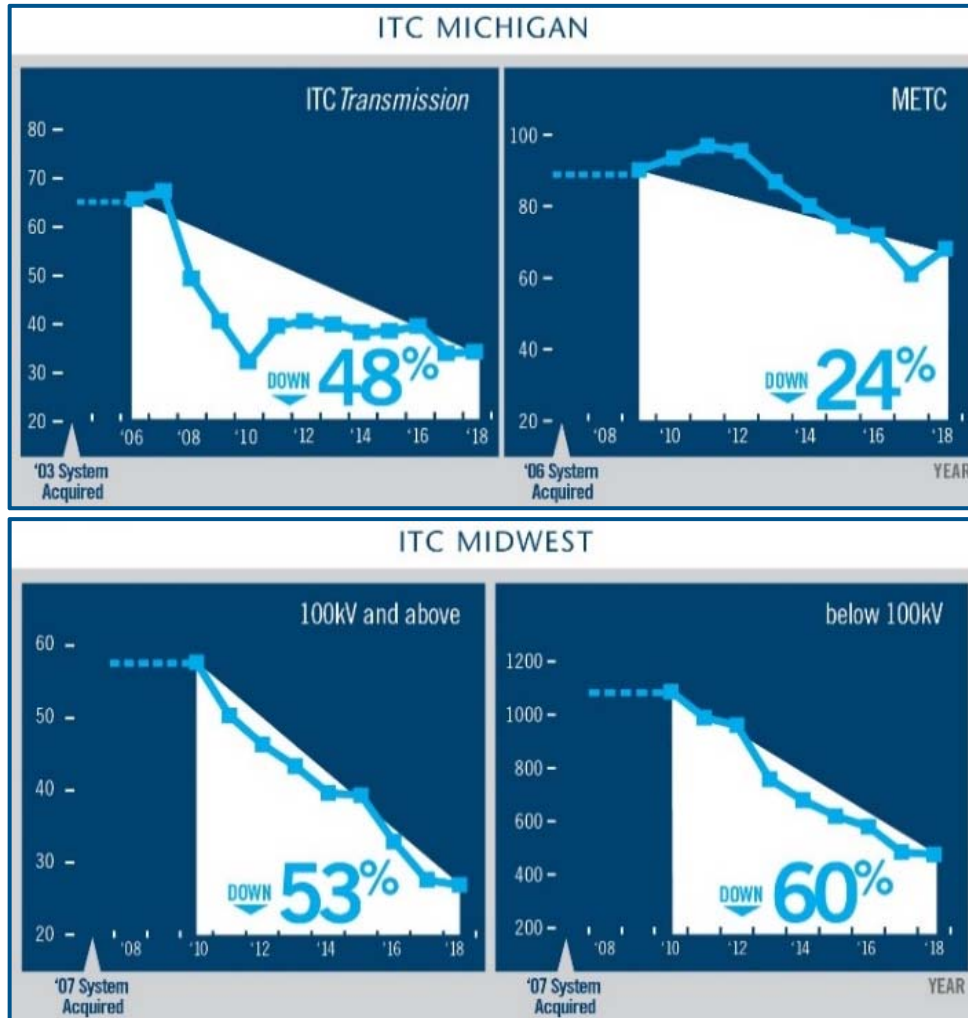
1: Costs are MTEP planning-level costs and may be different from actual capital expenditure.

Source: MISO Transmission Expansion Plan (MTEP) Reports.





System Performance and Impact of Reliability Improvements



ITC’s system investments and targeted capital and maintenance programs have improved the performance of the transmission system overall. ITC has reduced the average number of outages in its service territories significantly:

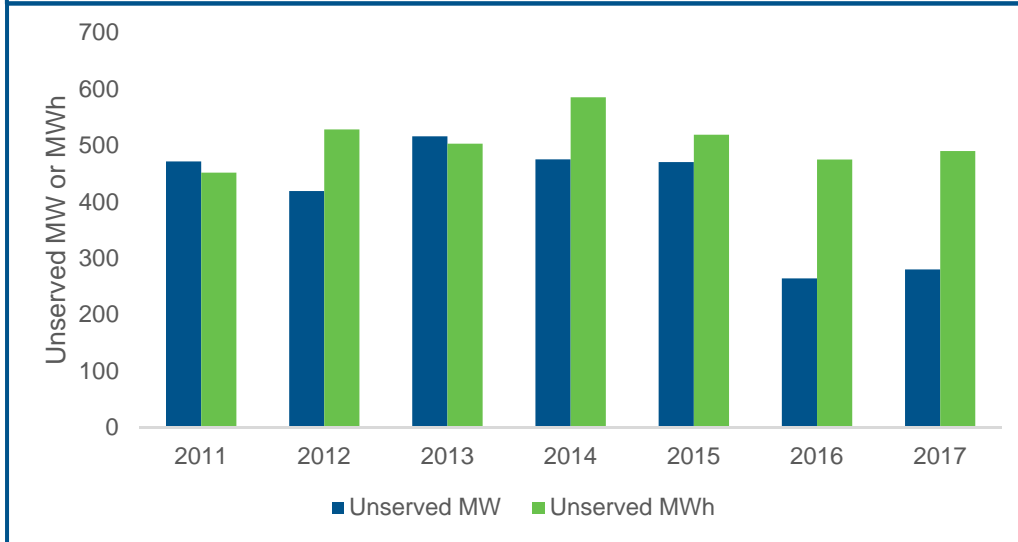
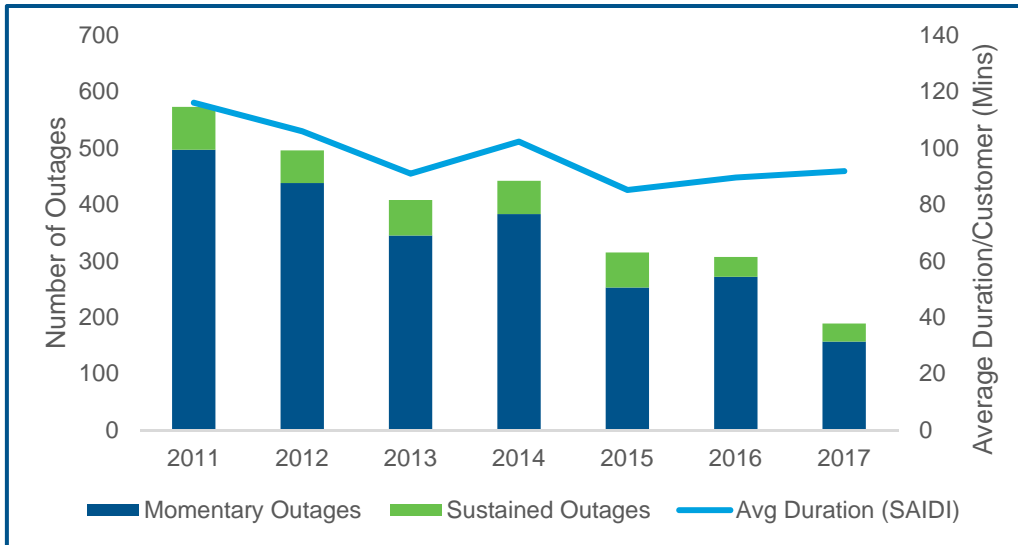
- ITCT: 48% reduction in outages between 2007 and 2018
- METC: 24% reduction in outages between 2009 and 2018
- ITCMW: 53% reduction in outages on lines 100 kV and above and 60% reduction on lines below 100 kV between 2010 and 2018

Source: ITC





Raw Performance Information for 34.5 kV Circuits



ITCMW is carrying out an extensive program to rebuild and convert its low voltage network to a higher voltage. This has significantly reduced outages and improved service reliability to customers.

System performance metrics show a declining trend of outages, although with some volatility.

ICF focused on the 2011 to 2017 period due to availability of data.

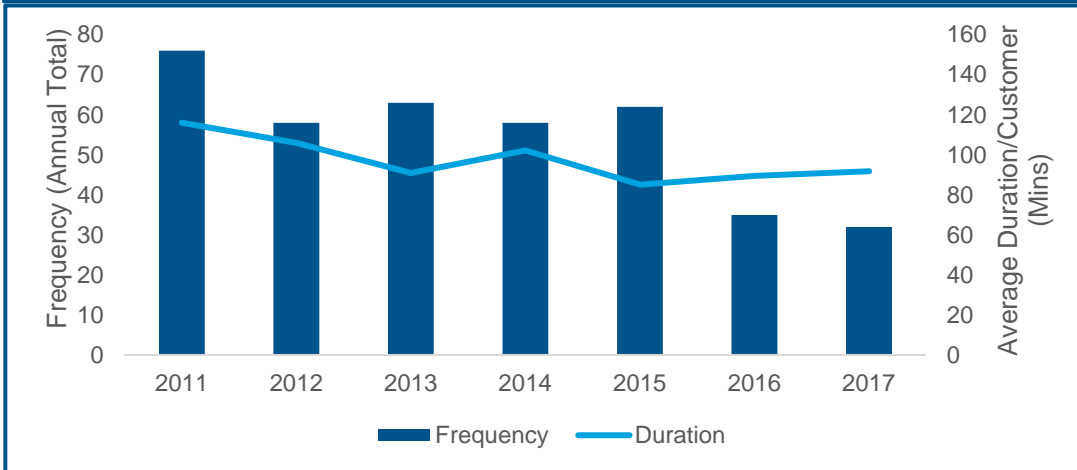
Total outages declined from 573 in 2011 to 189 in 2017. Sustained outages also declined by more than 50% over the period, from 76 in 2011 to 32 in 2017.

Measures of unserved power and energy also declined over the long term, although appearing to be relatively flat in the early years.

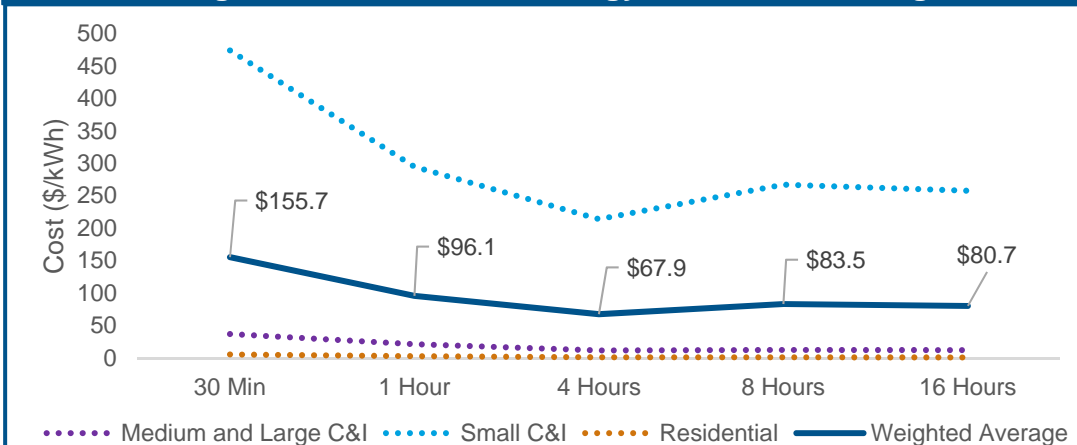


Customer Outage Frequency, Duration, and Unserved Energy Cost Assumptions

Annual Outage Frequency and Duration – Sustained Outages



Average Cost of Unserved Energy – Sustained Outages



Sources:
 1. Cost information from Updated Value of Service Reliability Estimates for Electric Utility Customers in the U.S., LBNL, 2015
 2. Weighted average calculated using energy sales information from EIA.

ITC’s 34.5 kV rebuild and conversion projects reduced frequency and duration of outages, which decreased unserved energy costs. ICF calculated benefits to customers from the avoided cost of unserved energy.

Frequency and duration values were obtained from circuit performance data provided by ITC. Frequency was based on the number of outages (momentary and sustained). Duration of sustained outages was based on SAIDI. The duration of momentary outages was assumed to be 5 minutes.

The weighted average cost of unserved energy was approximately \$67.9/kWh for sustained outages. Cost of unserved energy was \$747.2/kWh for momentary outages.

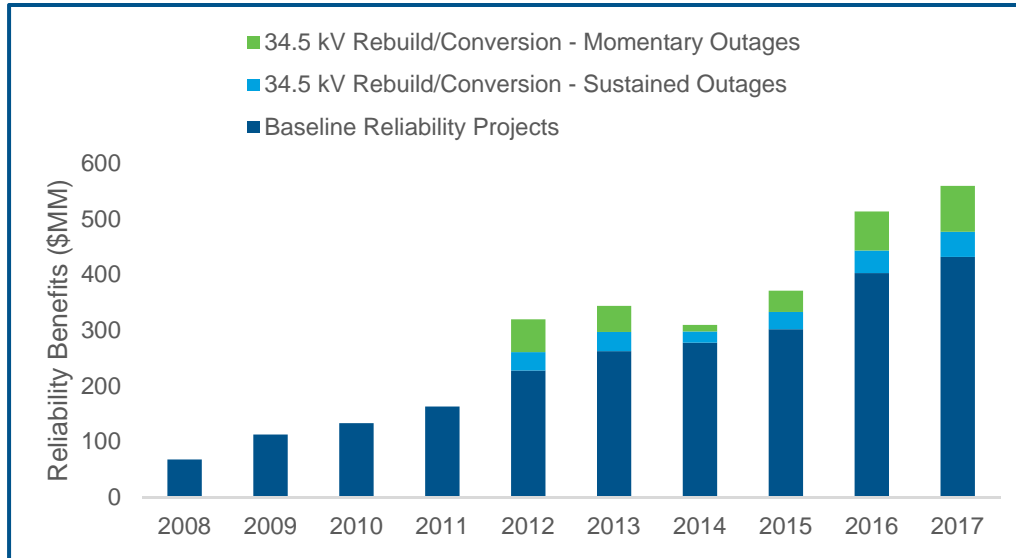


Results





Annual Reliability Benefits



PV Benefits (2019\$ M)	
34.5 kV Rebuild/Conversion – Momentary Outages	322
34.5 kV Rebuild/Conversion – Sustained Outages	214
Baseline Reliability Projects	2,517
Total	3,053

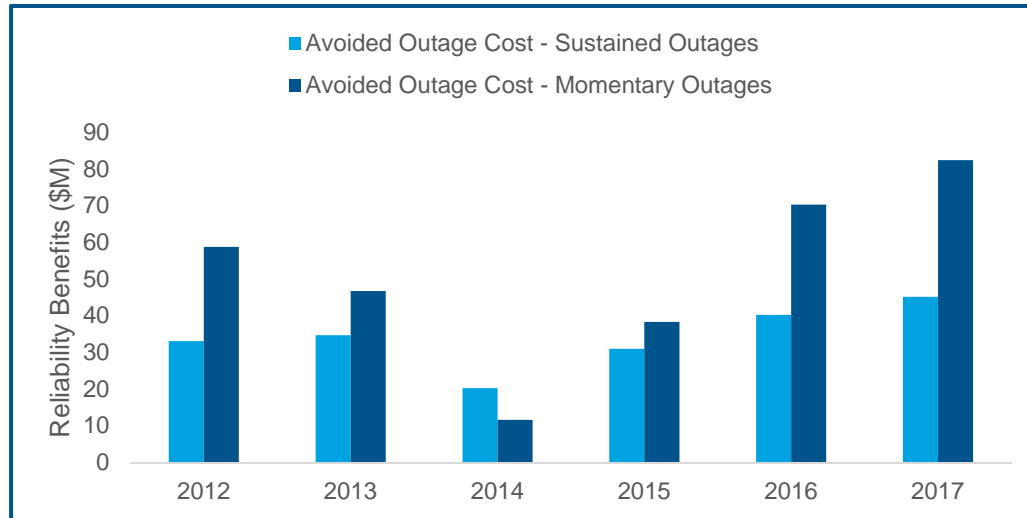
ICF calculated benefits from 34.5 kV Rebuild/Conversion Projects based on avoided outage/unserved energy costs.

Benefits from Baseline Reliability Projects were assumed to be equal to the cost of the projects and calculated as the estimated annual revenue requirement.

The Present Value of benefits between 2008 and 2017 is approximately \$3.1B, comprising approximately \$0.5B from the 34.5 kV Rebuild and Conversion projects and \$2.5B from Baseline Reliability Projects.



Benefits from 34.5 kV Rebuild and Conversion Projects



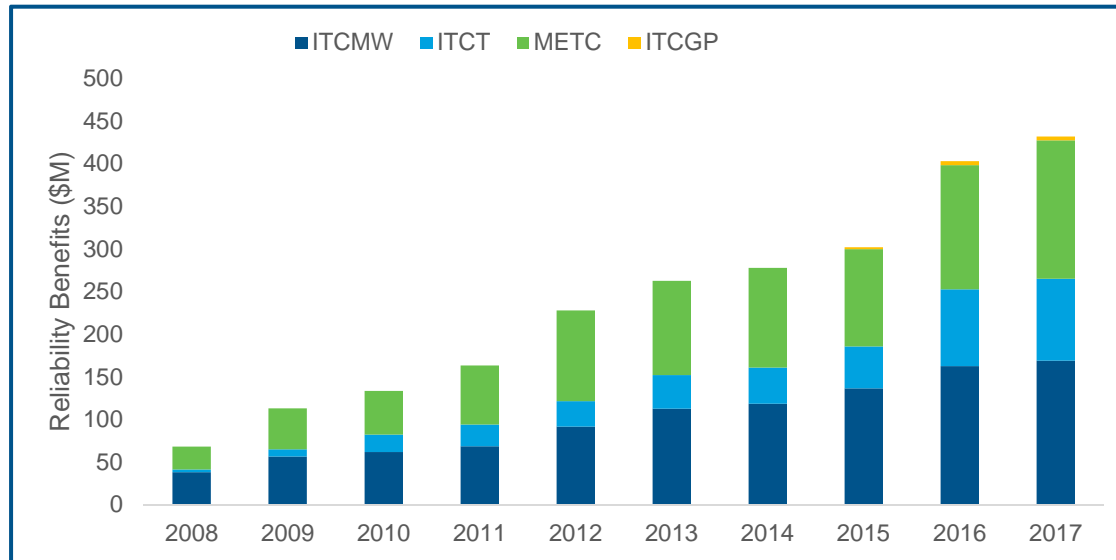
PV Benefits (2019\$ M)	
34.5 kV Rebuild/Conversion – Momentary Outages	322
34.5 kV Rebuild/Conversion – Sustained Outages	214
Total	536

ITC’s system improvements reduced the frequency and duration of outages over the 2011 to 2017 period, resulting in benefits to consumers. In general, the value depended on the change in frequency and duration of outages and the size of demand served by the feeders that were upgraded. Because the duration of momentary outages was assumed to be fixed, those benefits depended on the change in frequency and the size of demand served.

The Present Value of benefits is approximately \$536M (in 2019\$). Reduced momentary outages account for \$322M (or 60%) of the benefits, while reduced sustained outages account for \$214M (or 40%) of the benefits.



Reliability Benefits from Baseline Reliability Projects



PV Benefits (2019\$ M)	
ITCGP	12
ITCMW	1,080
ITCT	426
METC	1,011

Benefits from Baseline Reliability Projects were assumed to be equal to the cost of the projects. ICF calculated the annual revenue requirement using the estimated average capital charge rate for each operating company.

The value of reliability benefits was commensurate with the ITC Operating Company investments in baseline reliability projects

- The benefits from ITCMW’s investments was approximately \$1.1B (or 42%) of the total benefits.
- The value for ITC Michigan was approximately \$1.4B, comprising approximately \$400M for ITCT and approximately \$1.0B for METC.
- ITCGP developed the northern portion of the 345 kV Elm Creek to Summit transmission line between 2015 and 2016. It was justified by SPP as a reliability project. The benefit over the first 3 years was approximately \$12 million.

The benefits will continue to accrue to customers over the service life of the projects, which is typically 40 or more years.



Regional Economic Benefits





Overview

This section provides results of the regional economic impacts as part of this study.

ITC operates in seven states and is in development in an eighth state. However, in this study benefits to consumers were assessed in only six states – Iowa, Illinois, Kansas, Michigan, Minnesota, and Oklahoma.

ITC provided investment data across these six states, representing capital and operating and maintenance expenditure for its operating companies.

The study was conducted for ITC Holdings' four operating companies:

- ITC Midwest: The study assessed the impact of investments in Iowa, Illinois, and Minnesota.
- ITC *Transmission*: The study assessed the impact of investments in Michigan. ITCT serves southeast Michigan.
- Michigan Electric Transmission Company: The study assessed the impact of investments in Michigan. METC serves the western and northern portions of Michigan's Lower Peninsula
- ITC Great Plains: The study assessed the impact of investments in Kansas and Oklahoma.

Input Assumptions



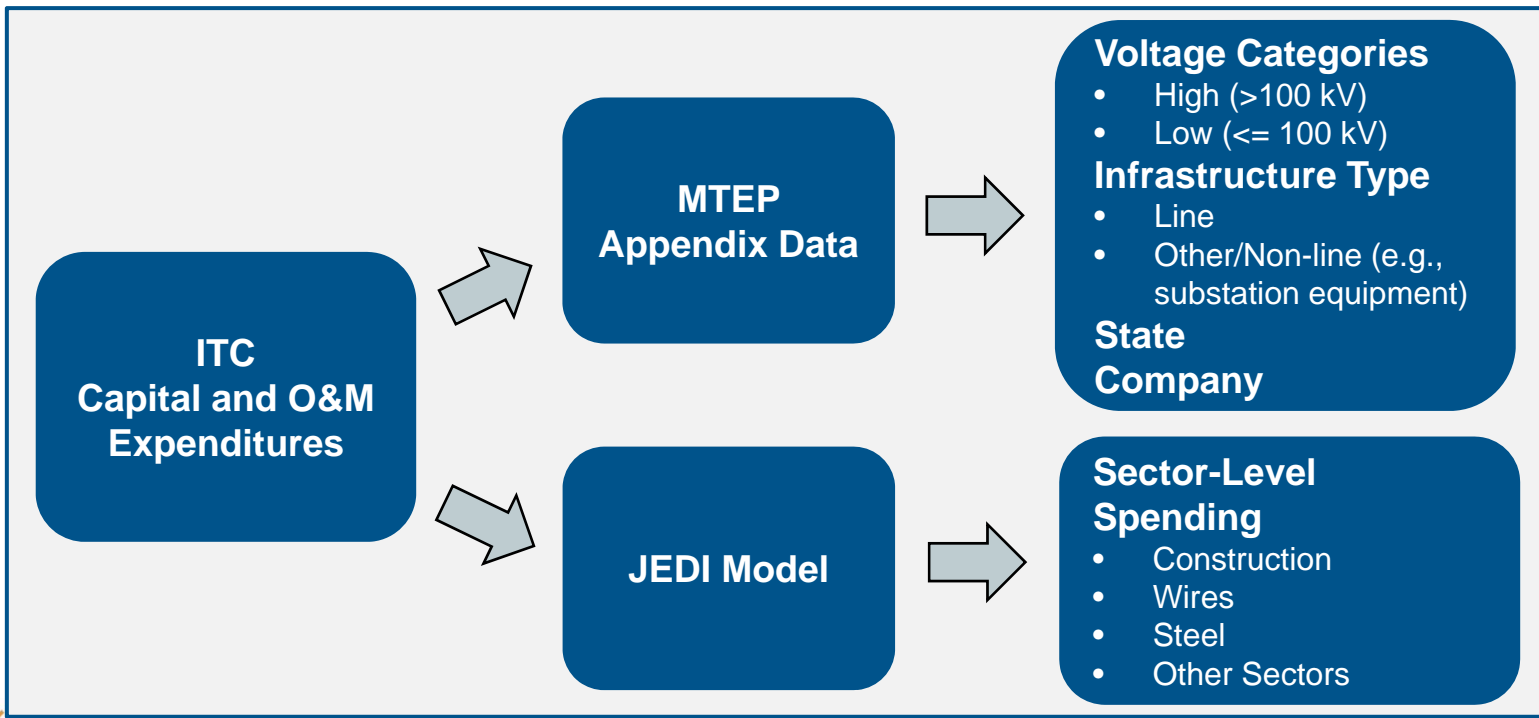


Data Sources and Models

ITC provided historical capital expenditure (CapEx) and operating and maintenance (O&M) spending by operating company and year.

ICF used information from the MISO Transmission Expansion Plan (MTEP) and the National Renewable Energy Laboratory (NREL) Jobs and Economic Development Impact (JEDI) model to categorize investments into details needed for economic modeling.

The IMPLAN model was used to quantify the economic impacts.



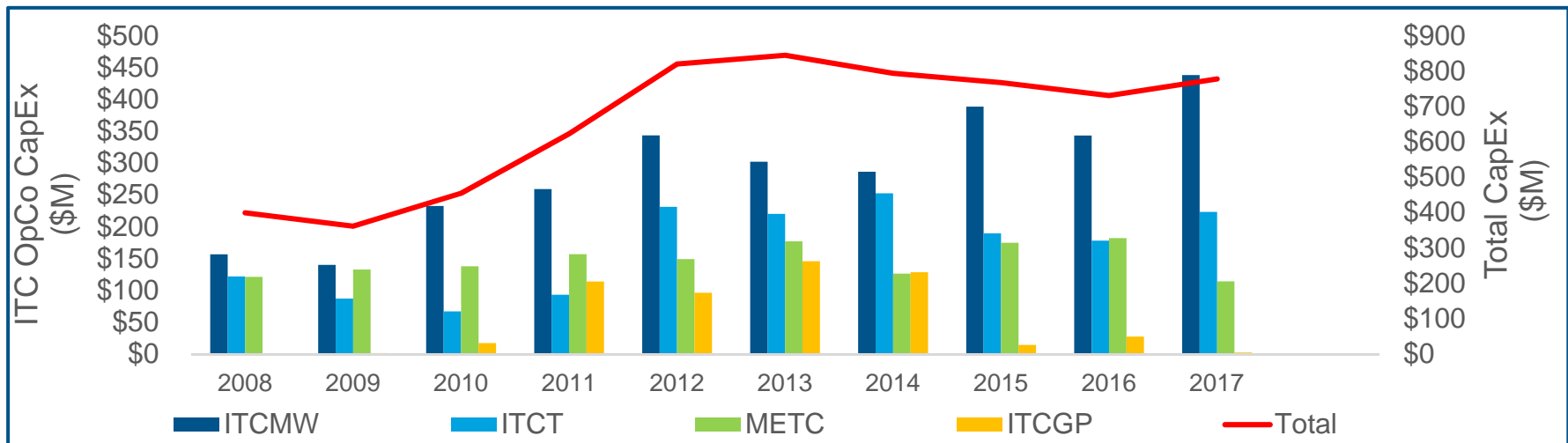


ITC Historical Capital Expenditure by Operating Company

Historical CapEx information shows that ITC invested \$6.58B across its four operating companies during the 2008 to 2017 study period.

The expenditure varied by operating company:

- ITCGP – \$547.5M
- ITCMW – \$2.89B
- ITCT – \$1.66B
- METC – \$1.47B



¹: Costs are actual capital expenditure and may be different from MTEP planning-level costs.

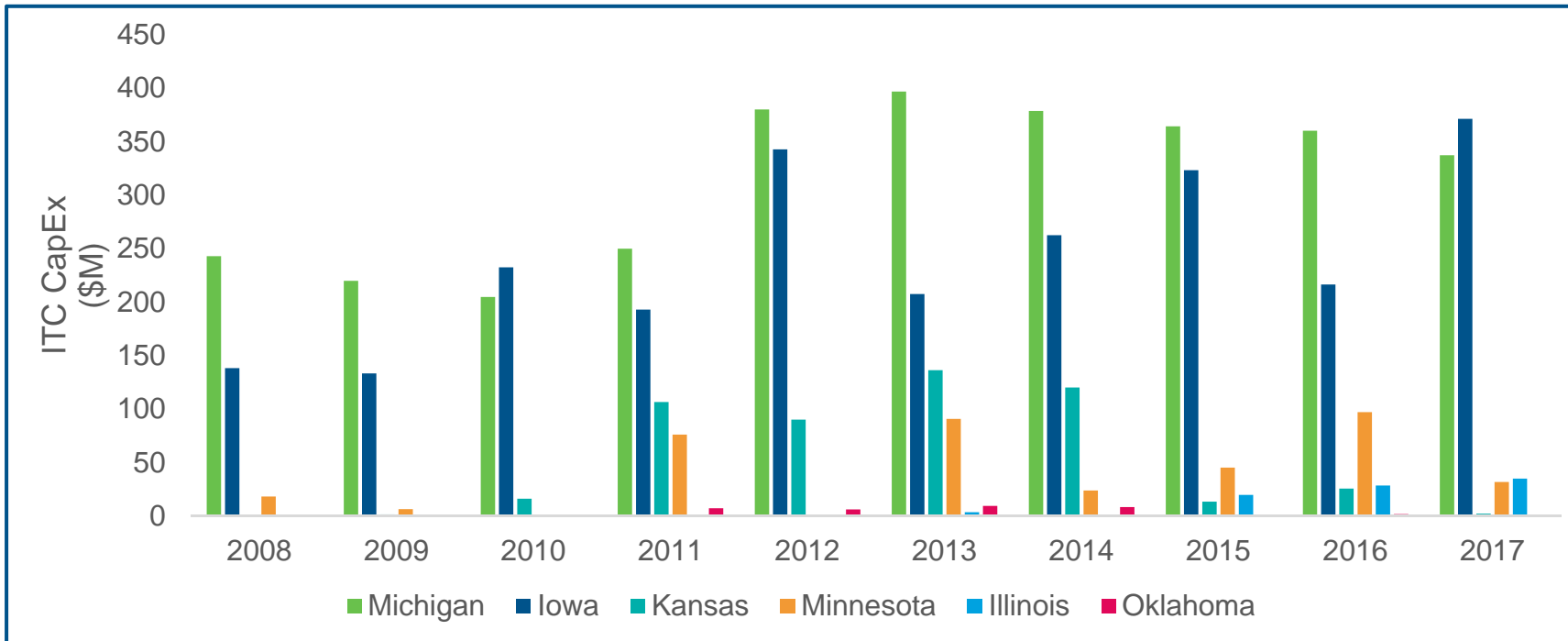




ITC Capital Expenditure by State

Most of the annual CapEx investments are in Michigan and Iowa, the main service territories of ITC Michigan and ITCMW, respectively.

Investments in Kansas and Oklahoma are lower, driven in part by the different operating characteristics of ITCGP. For example, ITCGP invests in projects in SPP but does not have any service territories.



¹: Costs are actual capital expenditure and may be different from MTEP planning-level costs.





Summary of CapEx Investments by Company and State

Investments mainly concentrated in Michigan and Iowa:

- In most years, Michigan has highest investment
 - Peak of nearly \$400M in 2013
 - Michigan investment (METC and ITCT combined) totals \$3.13 billion
 - Sizeable investments in Kansas; Minnesota in some years

Investments in Illinois, Oklahoma were approximately \$100M in total:

- Illinois investment of \$87M; Oklahoma investment of \$35M

State	ITCMW	ITCT	METC	ITCGP	Total
Iowa	\$2,422				\$2,422
Illinois	\$87				\$87
Kansas				\$512	\$512
Michigan		\$1,663	\$1,471		\$3,135
Minnesota	\$390				\$390
Oklahoma				\$35	\$35
Total	\$2,899	\$1,663	\$1,471	\$548	\$6,581

*All values in \$ millions. Values may not match due to rounding.
 Costs are actual capital expenditure and may be different from MTEP planning-level costs.

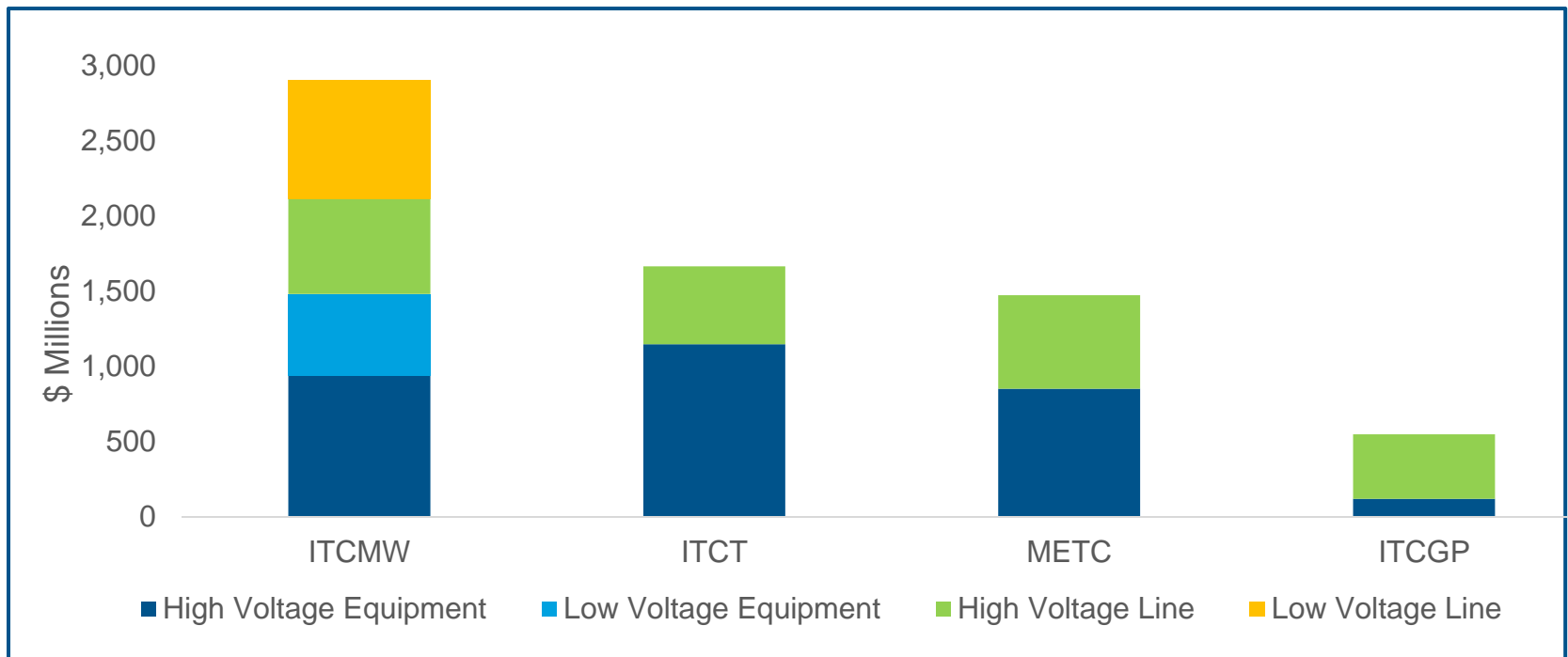


ITC Capital Expenditure by Company and Category

Low voltage (below 100 kV) transmission equipment investments occur only in ITCMW.

ITCT had the highest high voltage equipment investments, slightly higher than ITCMW and METC.

A majority of ITCGP investment was in high voltage line.



¹: Costs are actual capital expenditure and may be different from MTEP planning-level costs.





Modeling and Analysis





JEDI Model Sector Proportions – I

Investment data from ITC were mapped to different economic sectors using NREL's JEDI model:

- State-level cost estimates by sector (construction, manufacturing, steel, wires, etc.) for transmission projects were based on project attributes (miles of line, voltage, etc.).
- These provide indications of the proportion of investments going to each sector based on type of project.

JEDI was used to generate sector spending proportions for four project categories:

- High Voltage Line (HVL)
- Low Voltage Line (LVL)
- High Voltage Equipment (HVE)
- Low Voltage Equipment (LVE)

Since JEDI only models line projects, some adjustments were made to estimate proportions for non-line projects.

Sector spending proportions differ by project category. Within project categories there are slight differences across states.



JEDI Model Sector Proportions – II

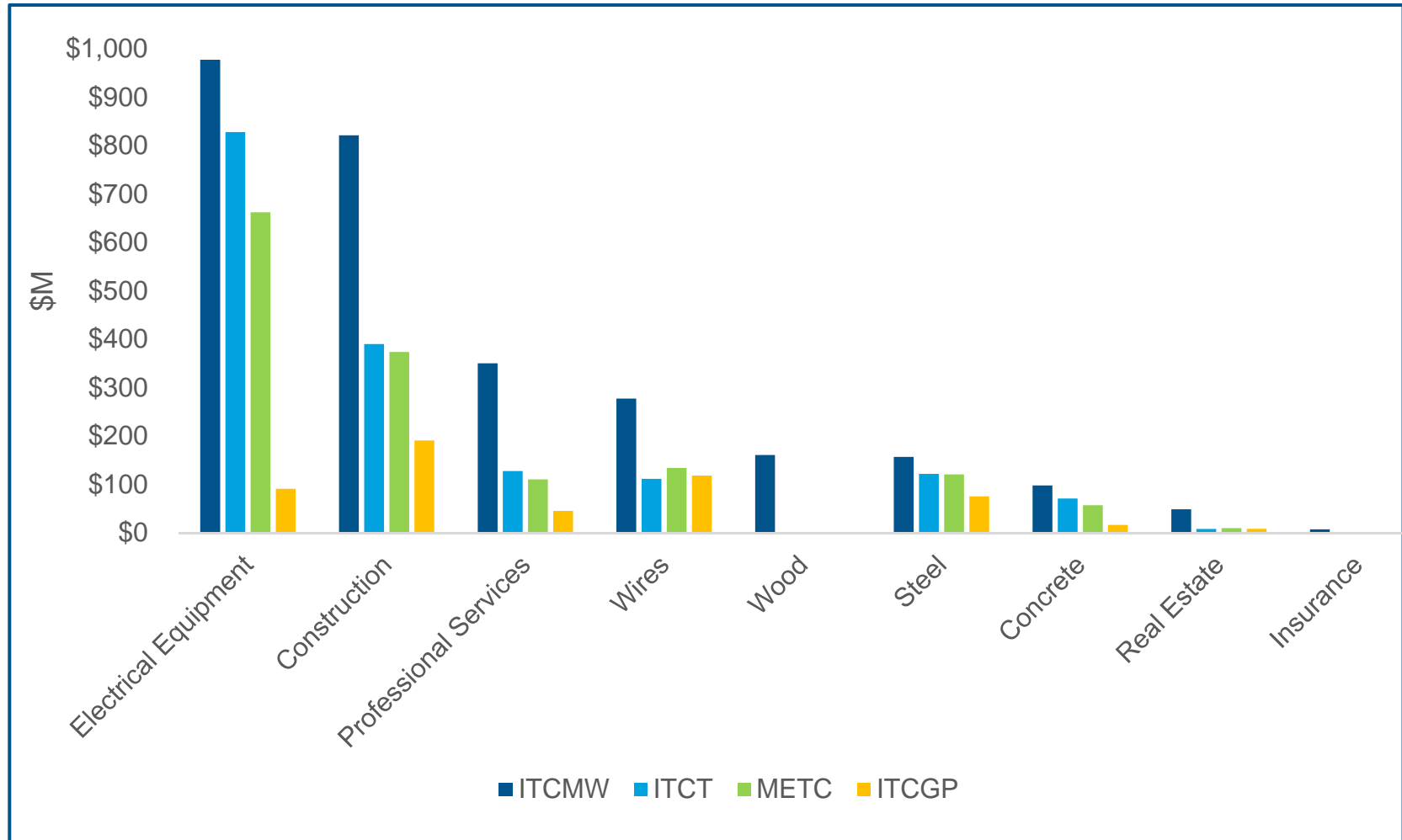
Examples of how sectoral distributions may differ based on project characteristics:

- Non-line projects are electrical equipment intensive
- Line projects are construction intensive
- Wood poles for low voltage line, steel towers for high voltage line
- Insurance costs are at or below 1% for all project types
- Rights-of-way payments affect the real estate sector
- Professional service sector makes up a larger proportion of low voltage projects than high voltage projects

Allows for estimating economic-sector level spending by company, state, and year.



ITC Capital Expenditure by Company and Sector



*Values generated using JEDI proportions





Capital Expenditure by Sector

ITC’s total CapEx investment between 2008 and 2017 was \$6.58B.

Approximately two-thirds of the spending was on electrical equipment and construction costs:

- \$2.56B was spent on electrical equipment. Most of this expenditure was non-local.
- \$1.78B was spent on construction. All of it was local.

Total spending on professional services was approximately \$634M. This was generally local or semi-local.

Investment in wires was approximately \$642M, and this was generally non-local.

Steel investments were approximately \$476M. The local production varied by state.

Purchases of concrete and wood totaled approximately \$400M.

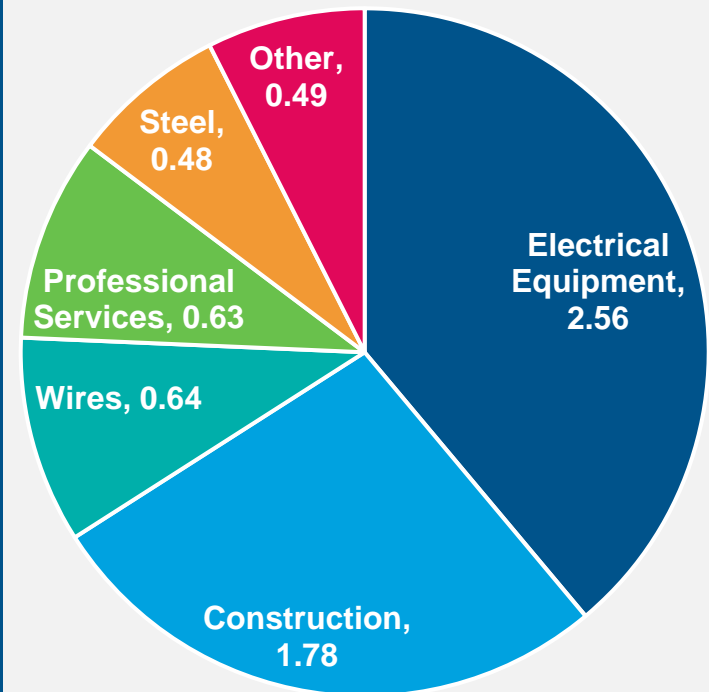
Spending on real estate and insurance was approximately \$90M.

Note:

Local implies spending occurs in the state in which the project is located.

Non-local implies spending occurs outside the state in which the project is located.

Capital Expenditure by Sector (\$B)



Spending by sector derived from JEDI sector proportions



1: Costs are actual capital expenditure and may be different from MTEP planning-level costs.



IMPLAN Methodology

IMPLAN analyzes macroeconomic effects of an economic activity on a single, pre-specified economic region (e.g., state):

- Based on the input-output relationships between industries and sectors.
- Includes margins and local purchase percentages.
- Local purchase percentage (LPP) describes the share of an industry and good's change in final demand that is supplied by the region of interest. For example, if the LPP for steel in Michigan is 55%, then 55% of the total demand increase for steel is supplied locally in Michigan, and the remaining comes from other states. Consequently, 55% of the jobs and economic impacts would come from the state in this example:
 - About 50% of ITC's total investments represent "leakage," i.e., they impact other states/regions
- Margins enable the allocation of expenditures to the producing industries or sectors. They represent the operational costs of businesses, typically wholesale trade and transportation. It is the share of the cost of a product that the retailer keeps to operate its business and pay its workers.

Multipliers indicate the total change in economic activity due to a one-unit direct investment or change:

- Direct – Economic activity (e.g., jobs created) due to the investments
- Indirect – Economic activity (e.g., jobs created) due to the industry inter-linkages
- Induced – Economic activity (e.g., jobs created) in all local industries due to consumers' consumption expenditures
- MRIO (multi-regional input-output) – Supply chain indirect and induced impacts into surrounding states
 - Includes feedback between states until all investment dollars are leaked
 - Captures more of the impact for every dollar invested





IMPLAN Output Definitions

Job-years is the same as Full Time Equivalent (FTE) or the work performed by a full-time worker in one year. It is generally similar to the 2,080-hour FTE for most sectors/industries.

Value Added estimates the incremental value generated by a particular sector in the total market value of a product or service. For example, if a product sells for \$100 in the market and has contributions from three sectors, then “value added” measures the incremental contributions of each of these three sectors, which could be 40, 35, and 25, respectively. It is a measure of the contribution to Gross State Product (GSP).

Labor Income is used to measure the portion of economic output that is coming from all forms of employment incomes, including wages and benefits for salaried employees and proprietor’s income. Labor income results provide a measure of the scenario’s impact on wages and salaries and gives an indication of the job quality in terms of average wages affected and other factors.

Tax Revenues include all federal, state, and local taxes on employee compensation, proprietor income, production and imports, households, and corporations. These taxes are calculated from changes in output and employment due to direct, indirect, and induced impacts.

Results



Summary of Economic Impacts

ITC CapEx and O&M expenditures generated or supported over 52,100 job-years across the six states analyzed in the study between 2008 and 2017:

- Over 41,000 job-years from CapEx spending and nearly 11,000 job-years from O&M expenditure

CapEx and O&M expenditures also generated nearly \$4.8B in value added, which is a measure of the gross state product (GSP):

- Approximately \$3.8B from CapEx and \$0.9B from O&M spending

Year	Job-Years	Output	Value Added	Labor Income
2008	3,929	\$626	\$358	\$238
2009	3,350	\$537	\$305	\$204
2010	4,348	\$691	\$390	\$261
2011	5,658	\$893	\$511	\$342
2012	6,352	\$1,009	\$574	\$383
2013	6,232	\$1,004	\$572	\$382
2014	5,905	\$936	\$534	\$357
2015	5,772	\$920	\$528	\$351
2016	5,141	\$841	\$482	\$320
2017	5,422	\$871	\$497	\$332
Total	52,107	\$8,331	\$4,751	\$3,175

*All values in 2019\$ millions. Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.





Summary of Economic Impacts – MISO

CapEx and O&M expenditures generated or supported over 48,300 job-years in the MISO area between 2008 and 2017:

- 37,600 job-years from CapEx spending and nearly 10,700 job-years from O&M expenditure

CapEx and O&M expenditures also generated over \$4.4B in value added, which is a measure of the GSP:

- Approximately \$3.5B from CapEx and \$0.9B from O&M spending

Year	Job-Years	Output	Value Added	Labor Income
2008	3,912	\$622	\$356	\$238
2009	3,324	\$532	\$302	\$202
2010	4,208	\$669	\$378	\$254
2011	4,887	\$780	\$447	\$298
2012	5,707	\$913	\$520	\$346
2013	5,270	\$862	\$492	\$327
2014	5,077	\$814	\$465	\$311
2015	5,645	\$899	\$516	\$344
2016	4,937	\$809	\$464	\$309
2017	5,350	\$857	\$490	\$328
Total	48,317	\$7,756	\$4,429	\$2,957

*All values in 2019\$ millions. Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.

Note: Table shows impact of all ITC investments and may include benefits in MISO due to expenditures in SPP.





Summary of Economic Impacts – SPP

CapEx and O&M expenditures generated or supported nearly 3,800 job-years in the SPP area between 2008 and 2017:

- Over 3,700 job-years from CapEx spending and roughly 100 job-years from O&M expenditure

CapEx and O&M expenditures also generated approximately \$321M in value added, which is a measure of the GSP:

- Approximately \$316M from CapEx and \$5M from O&M spending

Year	Job-Years	Output	Value Added	Labor Income
2008	17	\$4	\$2	\$1
2009	26	\$5	\$3	\$2
2010	140	\$22	\$12	\$8
2011	770	\$114	\$64	\$44
2012	644	\$97	\$54	\$37
2013	963	\$142	\$80	\$55
2014	828	\$123	\$69	\$47
2015	127	\$22	\$12	\$8
2016	204	\$32	\$18	\$12
2017	71	\$14	\$7	\$5
Total	3,790	\$576	\$321	\$218

*All values in 2019\$ millions. Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.

Note: Table shows impact of all ITC investments and may include benefits in SPP due to expenditures in MISO.





ITC Employment Impacts by Company

Annual ITC-wide employment impacts peaked between 2012 and 2014. In 2012 ITC's investments supported 6,353 jobs. On average, ITC's investments supported over 5,200 jobs each year.

Year	ITCMW	ITCT	METC	ITCGP	Total (Job-Years)
2008	1,512	1,173	1,244	0	3,929
2009	1,393	790	1,155	12	3,350
2010	2,102	838	1,286	121	4,347
2011	2,465	928	1,503	762	5,658
2012	2,643	1,821	1,260	629	6,353
2013	2,382	1,494	1,398	957	6,231
2014	2,272	1,728	1,084	820	5,904
2015	2,815	1,439	1,419	99	5,772
2016	2,409	1,229	1,318	184	5,140
2017	2,914	1,467	999	42	5,422
Total (Job-Years)	22,907	12,908	12,666	3,627	52,107

*Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.

Note: Table shows employment impact of each OpCo's investments; actual location of jobs may be outside the OpCo's territory.

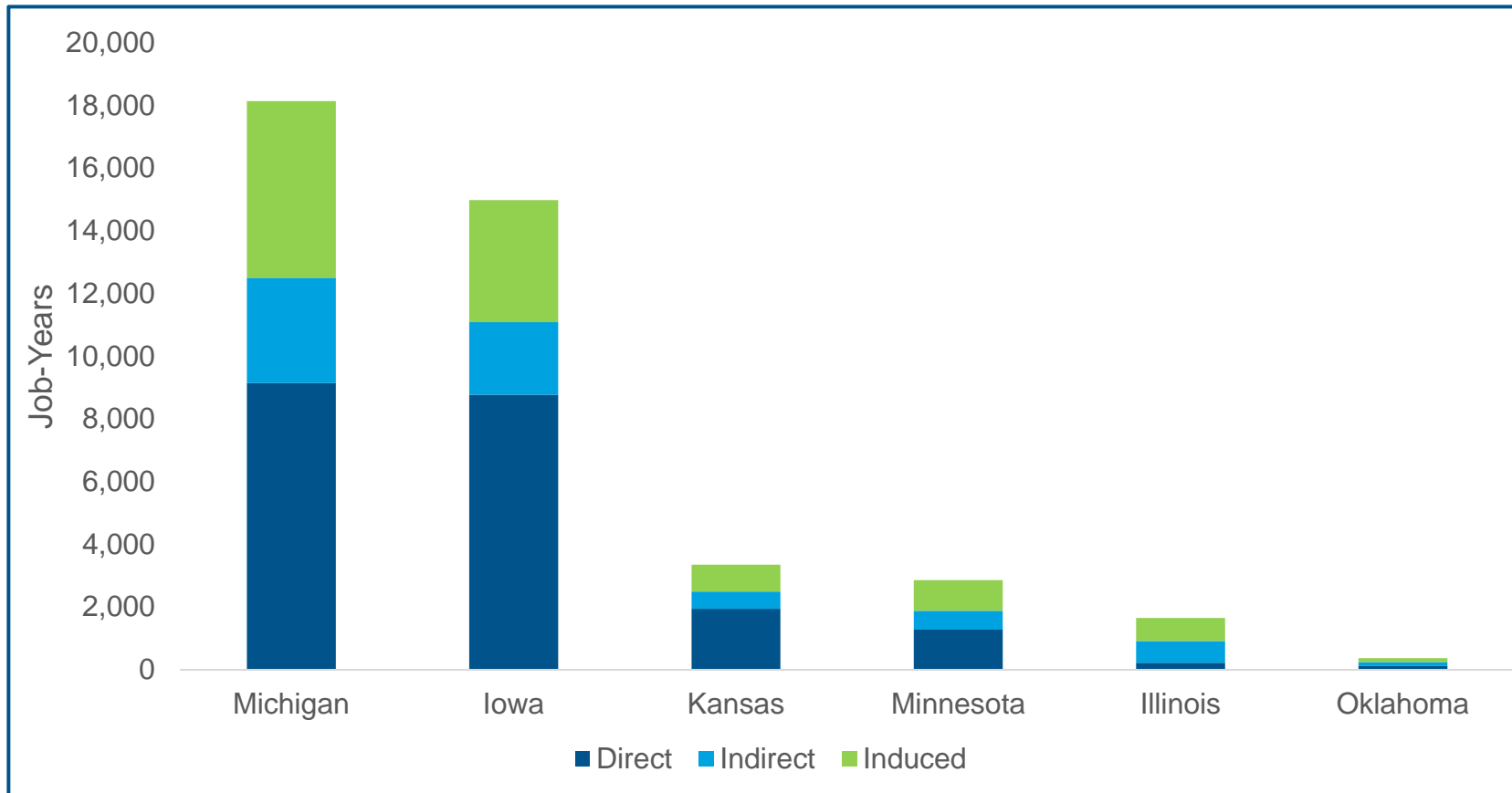




CapEx Employment Impacts by State

ITC capital expenditures supported more than 41,000 job-years between 2008 and 2017 in the six states analyzed in the study:

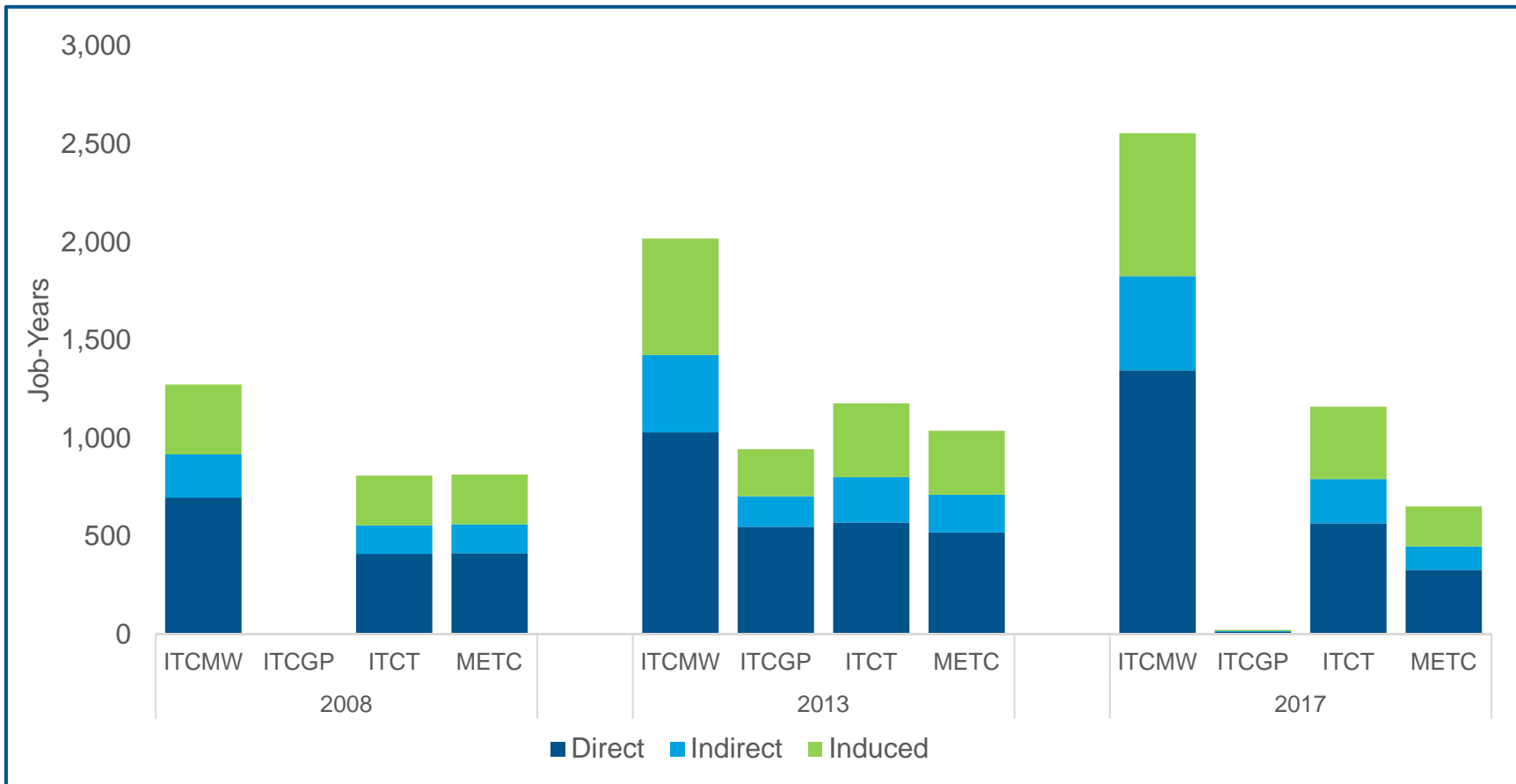
- This included 21,500 direct jobs, 7,600 indirect jobs, and 12,200 induced jobs.





CapEx Employment Impacts by Company

ITCMW capital expenditures supported over 19,400 job-years in the six states analyzed in the study. ITC Michigan supported over 18,300 job-years.



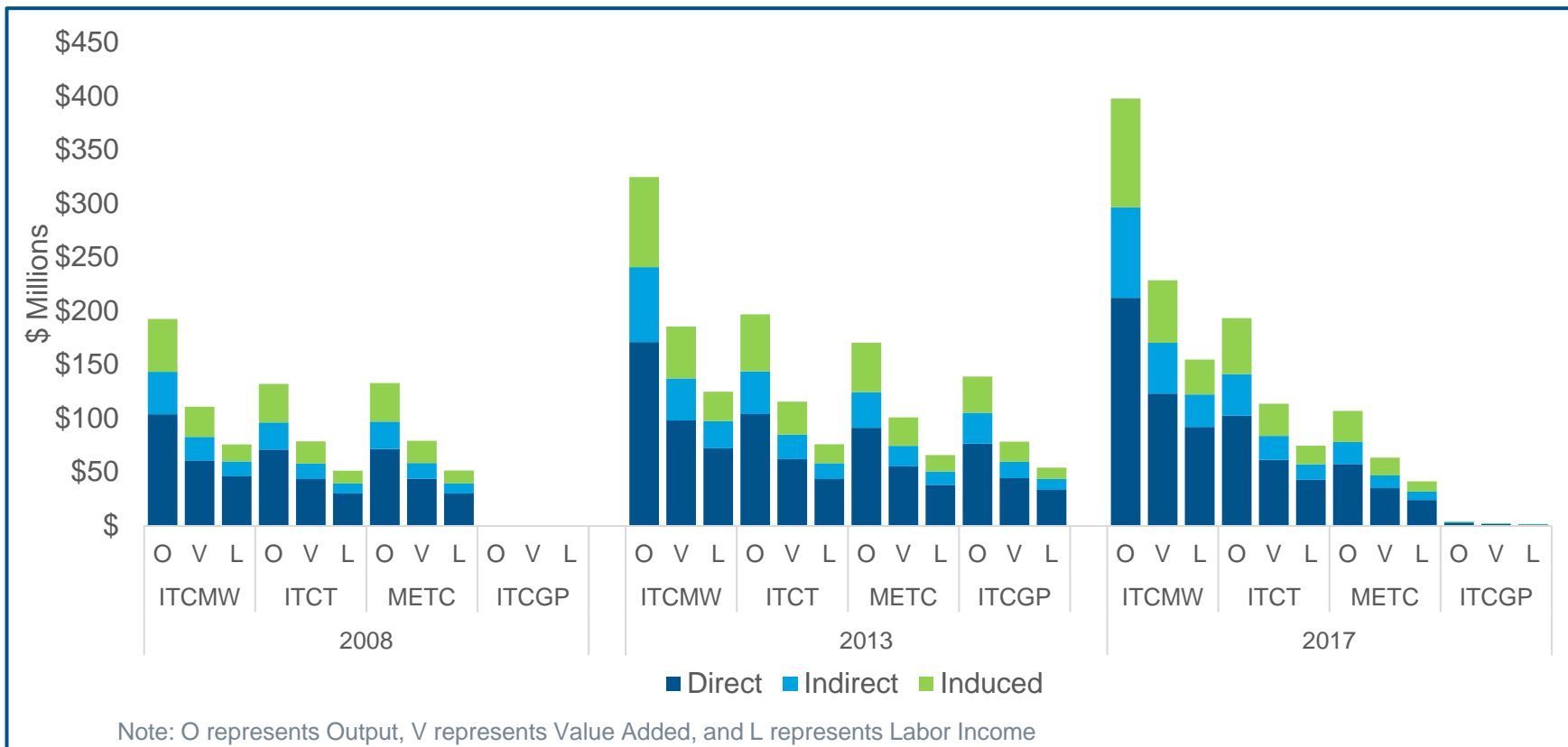


CapEx Impacts by Company – Output, Valued Added, and Labor Income

ITCMW CapEx generated over \$3B in total output.

ITC Michigan also generated approximately \$3B in total output.

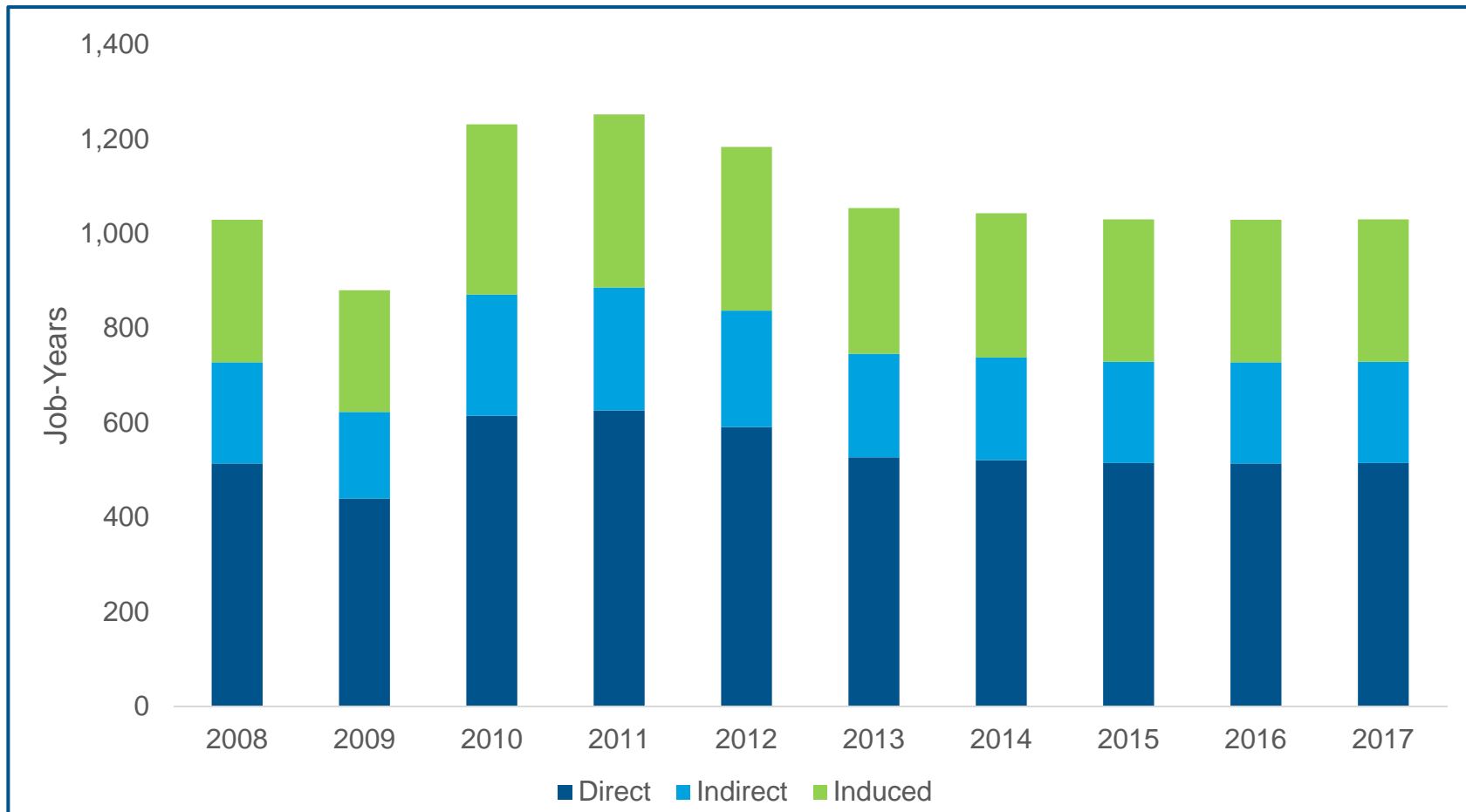
ITCGP generated approximately \$525M.





O&M Employment Impacts

ITC's O&M expenditures supported approximately 11,000 job-years between 2008 and 2017 in the states in which ITC operates.

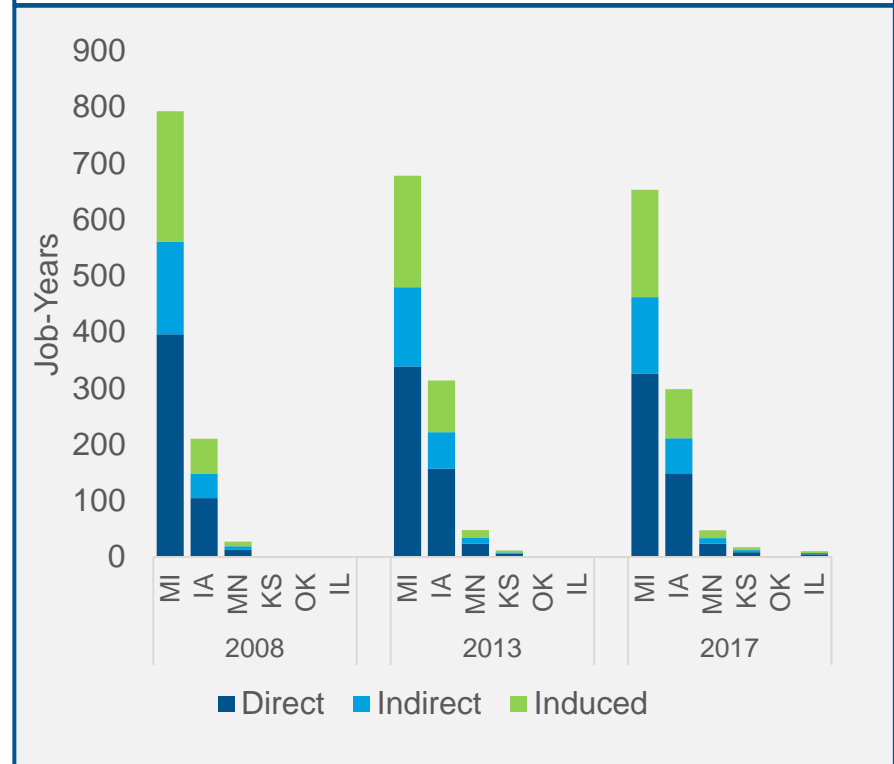
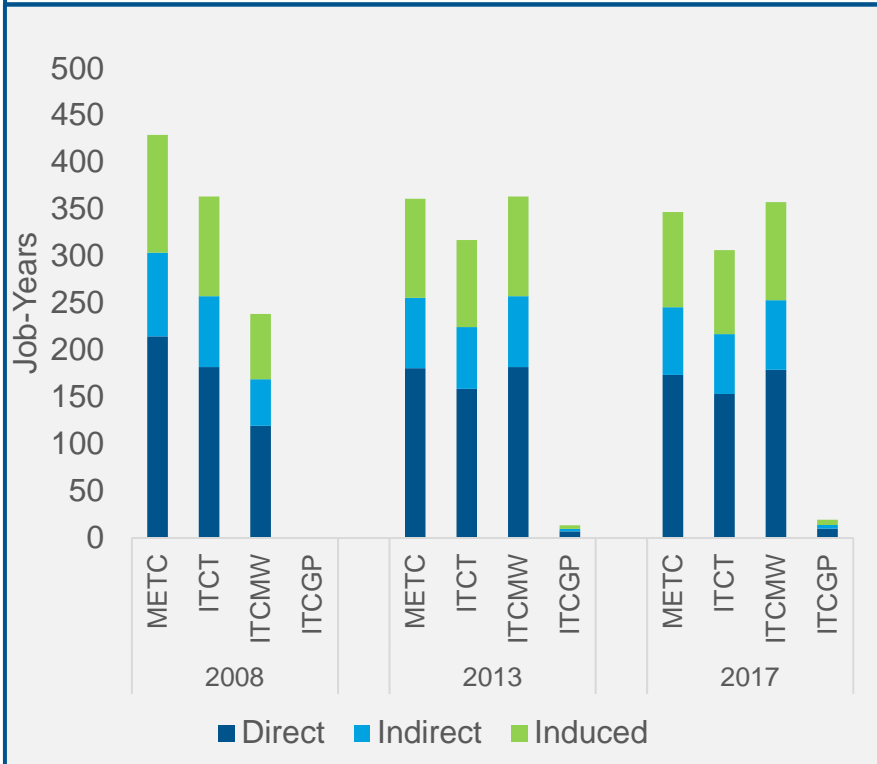




O&M Employment Impacts by Company and State

METC (3,860 job-years) had the highest total employment impacts
ITCMW (3,460 job-years) and ITCT (3,380 job-years) were similar in size
Less than 100 job-years for ITCGP given its much smaller project footprint

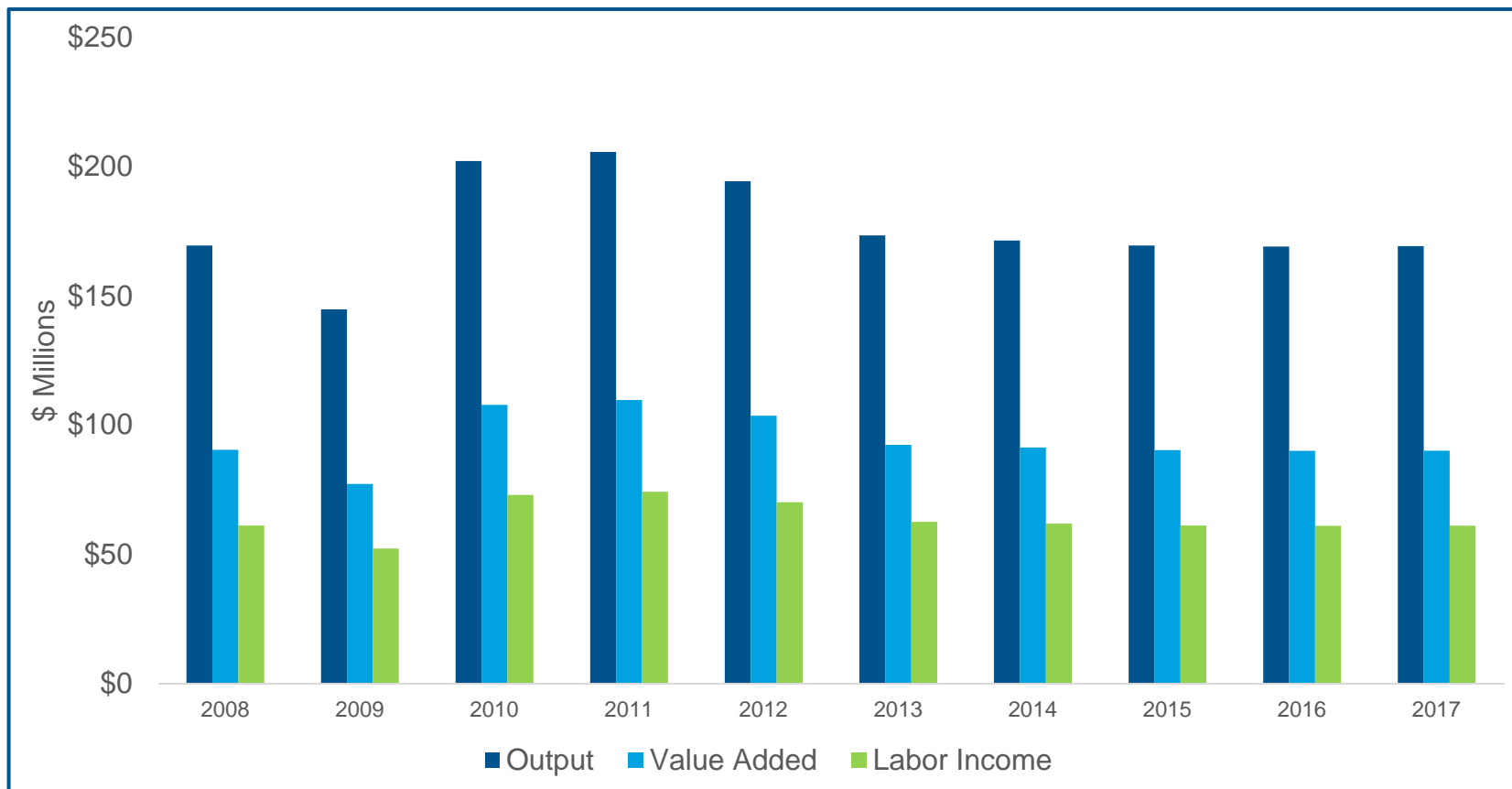
Of the six states included in the analysis, the highest employment impacts between 2008 and 2017 were in Michigan with 7,240 job-years and Iowa with 3,040 job-years





Total O&M Impacts

- **Between 2008 and 2017, O&M expenditure generated \$1.8 billion in output, \$942 million in value added, and \$638 million in labor income in the six states included in the analysis.**





Summary of Tax Impacts

ITC CapEx and O&M expenditures resulted in over \$980M in total tax impacts over the study period.

The total tax impact (federal, state, and local) was highest at nearly \$120M in 2013.

Taxes comprised approximately \$336M in state and local taxes and \$647M in federal taxes.

Year	State and Local	Federal	Total
2008	\$24.8	\$48.7	\$73.4
2009	\$21.4	\$41.6	\$63.0
2010	\$27.5	\$53.1	\$80.6
2011	\$35.4	\$69.5	\$104.9
2012	\$40.5	\$77.9	\$118.4
2013	\$40.5	\$78.2	\$118.7
2014	\$37.5	\$72.7	\$110.2
2015	\$37.5	\$71.7	\$109.1
2016	\$34.9	\$66.1	\$101.0
2017	\$36.4	\$67.9	\$104.2
Total	\$336.4	\$647.2	\$983.6

*All values in 2019\$ millions. Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.





ITC Tax Impacts by Region

MISO had the highest total tax impact at over \$900M, whereas SPP had a total tax impact of over \$60M.

Year	SPP	MISO	Total
2008	\$0.4	\$73.1	\$73.4
2009	\$0.5	\$62.4	\$63.0
2010	\$2.4	\$78.1	\$80.6
2011	\$12.8	\$92.1	\$104.9
2012	\$10.8	\$107.6	\$118.4
2013	\$16.0	\$102.7	\$118.7
2014	\$13.8	\$96.4	\$110.2
2015	\$2.3	\$106.8	\$109.1
2016	\$3.5	\$97.5	\$101.0
2017	\$1.5	\$102.7	\$104.2
Total	\$64.0	\$919.5	\$983.6

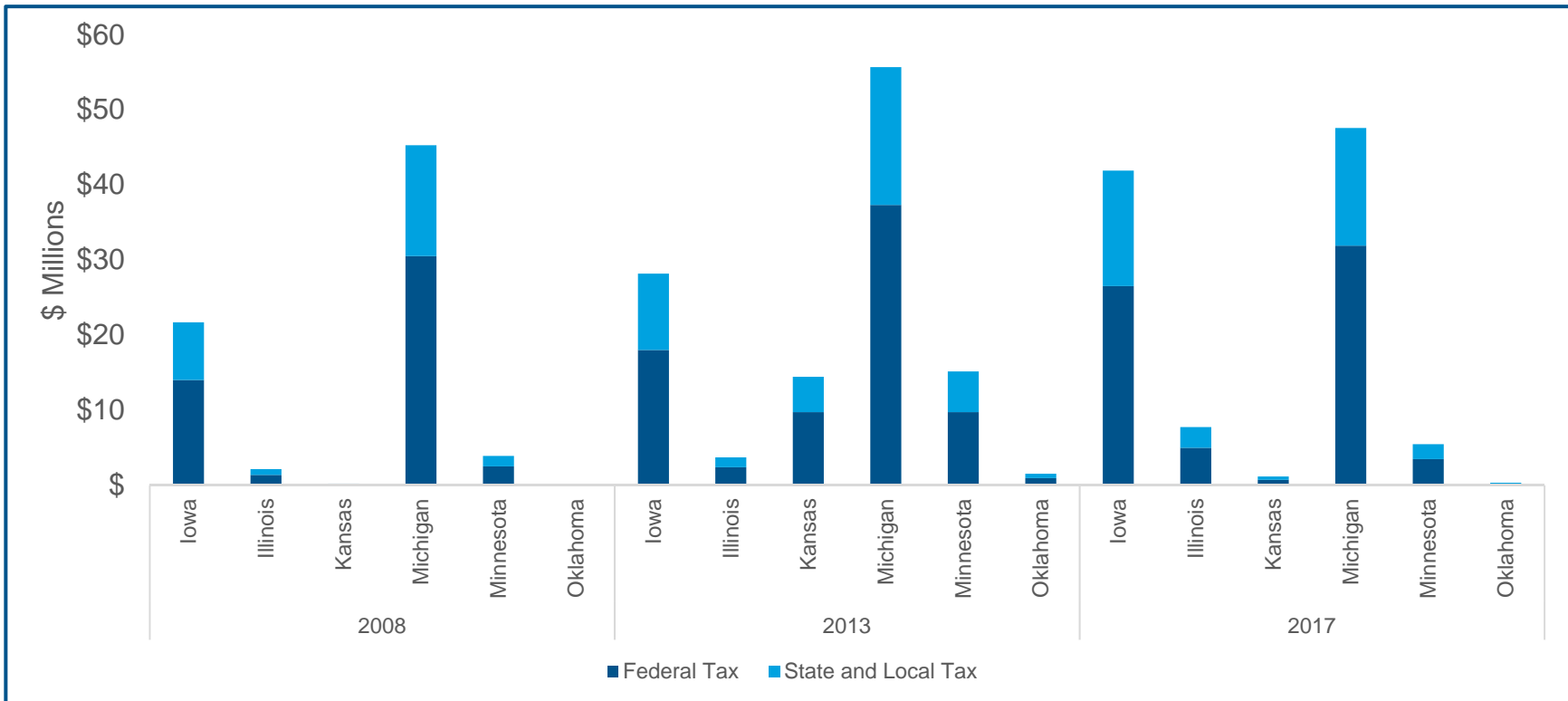
* All values in 2019\$ millions. Values may not match due to rounding. Total impacts include direct, indirect, and induced impacts.



Federal, State, and Local Tax Impacts by Region and State

Michigan had the highest taxes, totaling \$331M in federal taxes and \$162M in state and local taxes.

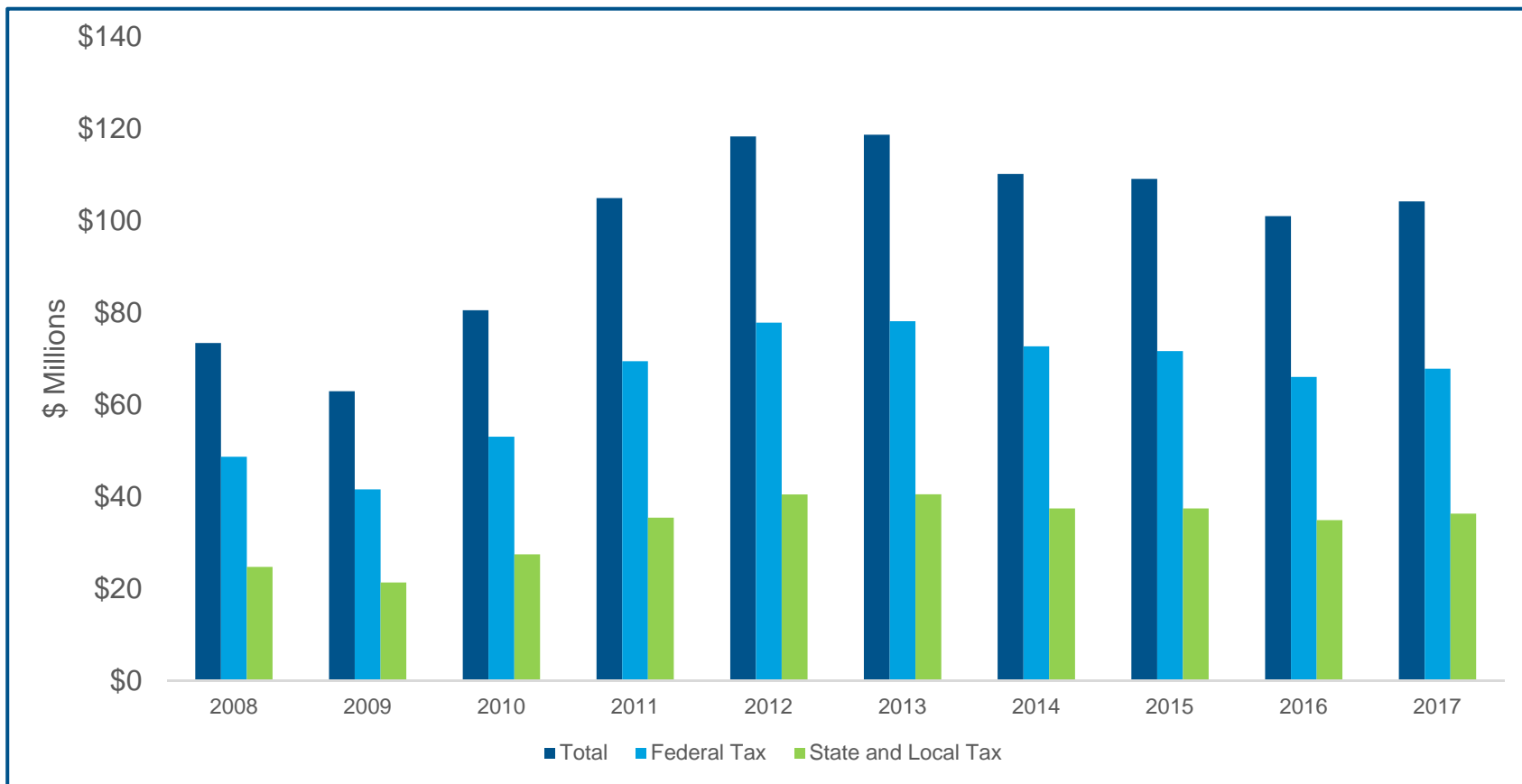
Total taxes in Iowa and Kansas were \$422M and \$57M, respectively.





ITC Tax Impacts by Year

Between 2008 and 2017 ITC generated over \$980M in total tax revenues, comprising approximately \$650M in federal taxes and \$340M in state and local taxes.





Conclusion – Economic Development Benefits

Cumulatively, ITC CapEx and O&M expenditures resulted in:

- More than 52,100 job-years, or 5,210 jobs each year on average
- \$8.3B in output
- \$4.8B in value added
- \$3.2B in labor income
- \$650M in federal taxes
- \$340M in state and local taxes

By operating company, employment impacts were highest in ITCMW:

- About 23,000 job-years were supported over the 10-year period
- Mostly in Iowa

By state, Michigan employment impacts were highest, followed by Iowa

- Approximately 25,400 job-years supported in Michigan
- Approximately 18,000 job-years supported in Iowa

Other Benefits



Wheeling Revenues

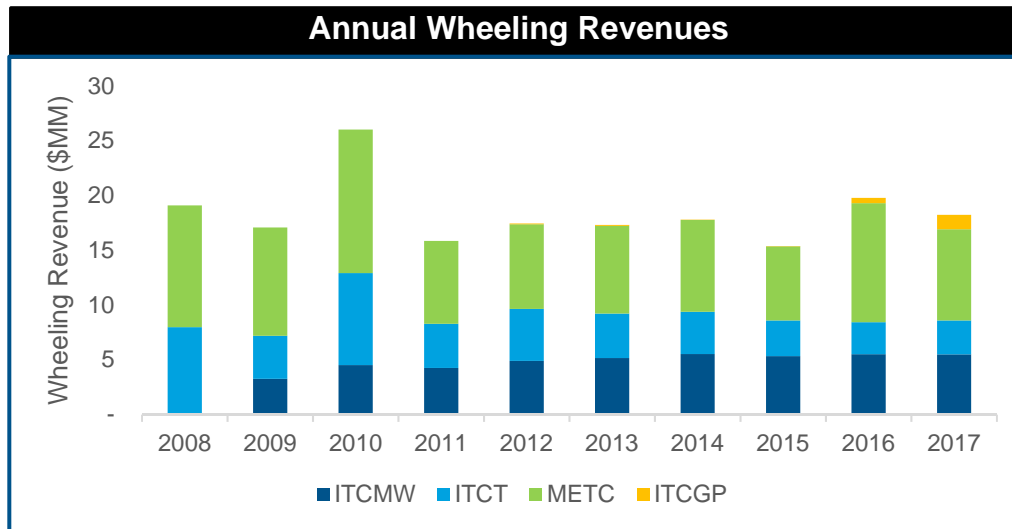


Wheeling Revenues

Transmission usage charges paid by customers outside ITC's service territory can provide additional benefits by offsetting the cost to customers in the study area.

ICF calculated the benefits from the actual wheeling revenues received for the usage of ITC's transmission lines.

Wheeling Revenues



PV Benefits (2019\$ Million)

ITCGP	2
ITCMW	47
ITCT	51
METC	100
Total	200

- **A transmission project that enables third parties to use available capacity for power transactions can provide additional benefits to ITC’s customers by reducing overall costs. The wheeling revenues collected from the third parties would offset some transmission costs that would otherwise be paid by ITC’s customers, resulting in savings for the customers.**
- **ICF calculated the benefits from the actual wheeling revenues received for the usage of ITC’s transmission lines.**
- **Total wheeling revenues over the study period were \$200M. METC revenues were approximately half of the total, at \$100M. ITCGP revenues were calculated starting in 2012, after the first ITC project was placed in service in SPP.**



ITC's Congestion Management Program



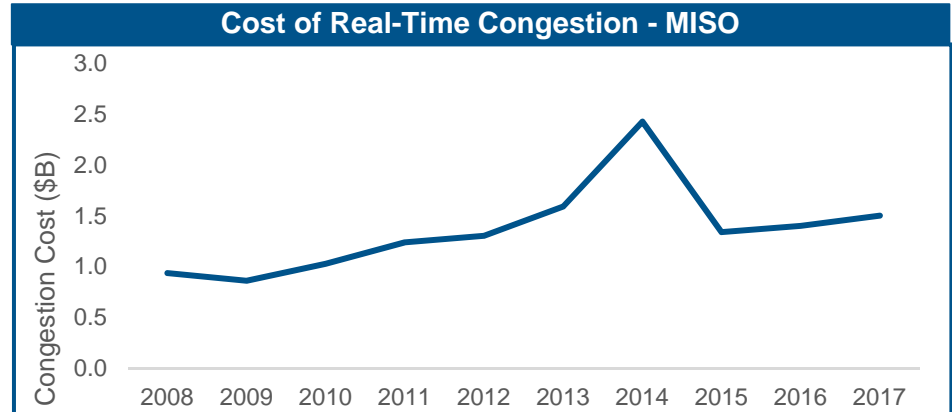


Overview of ITC's Congestion Management Program

ITC developed the Market Analysis and Congestion Evaluation (MACE) program to help monitor congestion in its footprints and act on the information to mitigate congestion when possible.

The MACE program sets ITC apart. ICF is not aware of any other Transmission Owner that has a similar congestion management program. It is not intended to provide direct financial benefits to ITC, and further highlights ITC's commitment to keeping costs as low as possible for customers.

ITC reviews potential congestion in its outage scheduling process and when necessary makes adjustments such as delaying coincident outages. ITC also monitors congestion in real time and takes action when possible. This might include restoring a previously scheduled outage temporarily. In addition, ITC reviews reports on congestion in its footprints and identifies short-term and long-term actions to mitigate significant congestion.



Source: MISO State of the Market reports, 2011-2017

By reducing congestion, the MACE program provides real financial benefits to customers. ICF did not quantify the benefits due to data limitations, but the cost of congestion in MISO provides a measure of the order of magnitude of savings that could be achieved from such a program.

MISO's Market Monitor calculated congestion costs as high as approximately \$2.4B in 2014. The annual average cost over the 2008 to 2017 study period was \$1.3B.

Because some congestion costs are hedged, this is not the actual cost paid by customers. However, it is a measure of congestion that is actually occurring on the system.





MACE Program Case Studies

Planned 161 kV Line Outage

Problem

Forced outage of major 345 kV following the planned outage of a 161 kV line creates new binding constraint and increases congestion cost.

Mitigating Action

ITC restored the 161kV line and resumed planned outage after the 345kV line was returned to service, reducing congestion cost.

Garfield - Hemphill

Problem

Planned outage of a 161 kV line increases parallel flow on neighboring line and creates binding constraint under contingency conditions.

Mitigating Action

ITC reconfigured the transmission system by opening a line, thus redirecting flows away from the constrained line and reducing congestion cost by approximately \$1M.

Vergennes - Pettis Rd

Problem

Planned transmission equipment outages combined with generation testing resulted in congestion on a major transmission line under contingency conditions.

Mitigating Action

ITC expedited work on the key transmission equipment and minimized its downtime. ITC also coordinated with the generator to reschedule the test.

Bass Creek - Sternberg

Problem

Concurrent planned line outages combined with pumped storage generator operation resulted in congestion on major transmission line and increased congestion cost.

Mitigating Action

ITC expedited work on key transmission equipment and returned to service ahead of schedule, eliminating congestion on the previously constrained line and reducing congestion cost.





MISO Market Monitor's Recommendations on Congestion Mitigation

The MISO Market Monitor's assessment of the impact of congestion and the importance of actions to mitigate it shows the benefits of an initiative like ITC's MACE program.

The Market Monitor recommended congestion mitigation measures similar to the MACE program. In its reports the Market Monitor identified the lack of coordination of transmission and generation outages as one of the factors contributing to the high value of real-time congestion. It recommended that that MISO explore alternatives to improve coordination of transmission and generation outages.

The Market Monitor estimated that approximately 25 percent of the total real-time congestion between January 2016 and May 2017 was attributable to multiple planned generation outages. Transmission outages that were scheduled at the same time as planned generation outages were not included in the assessment.

Source: MISO State of the Market reports, 2016 and 2017

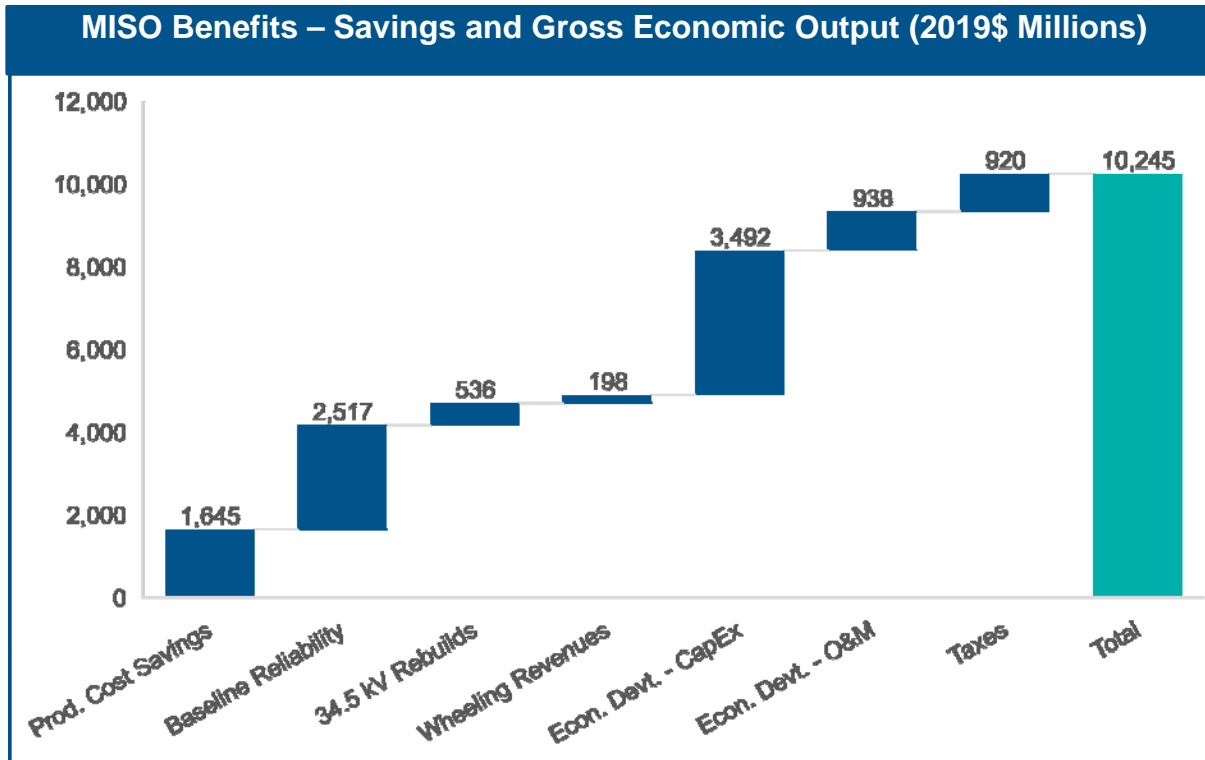


Summary of Benefits of ITC Investments





MISO Benefits from ITC's Investments



48,300
 Job-years supported in Michigan, Iowa, Minnesota, and Illinois as a result of ITC's CapEx and O&M investments over the 10-year study period from 2008 to 2017

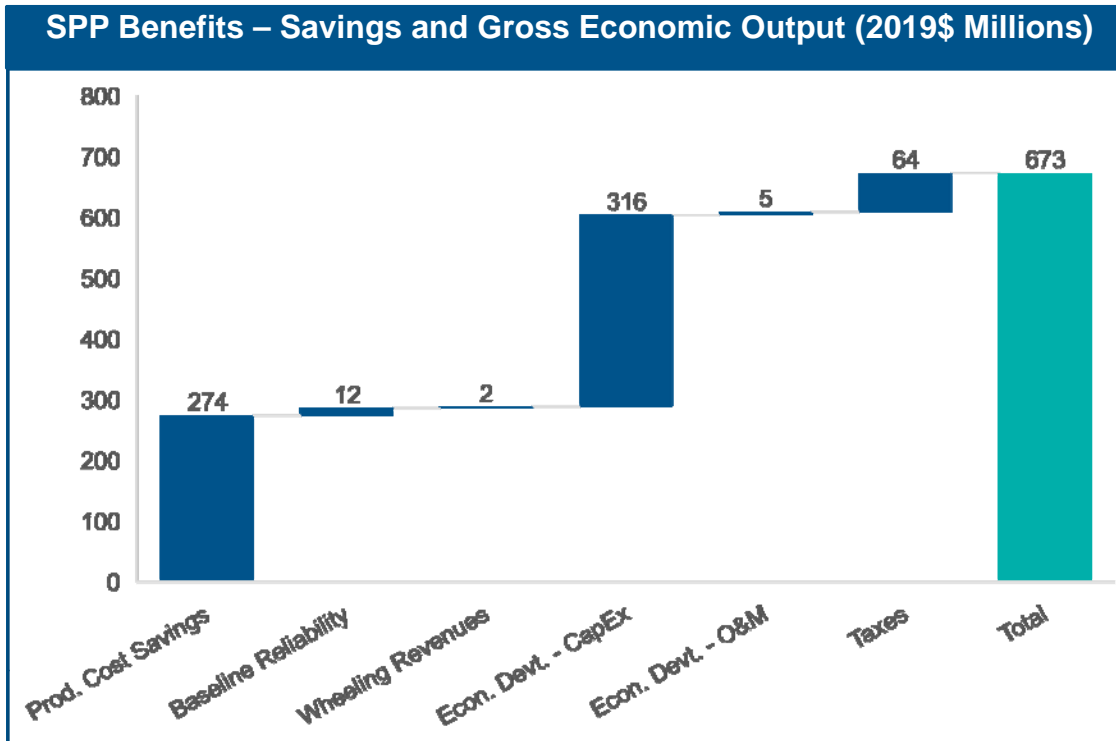
In terms of savings and gross output, the benefits from ITC's investments to its customers in MISO are more than \$10.2B over the 10-year study period, or over \$1B annually on average. This includes production cost savings, the value of reliability improvements, higher local economic activity, and higher tax revenues (federal, state, and local). Many of these benefits will continue to accrue to ITC's customers over the service life of the projects, which is typically 40 or more years. CapEx, O&M, and tax impacts include small spillovers from SPP investments.

Approximately 48,300 job-years were supported in states within MISO. This is an average of over 4,800 jobs annually.





SPP Benefits from ITC's Investments

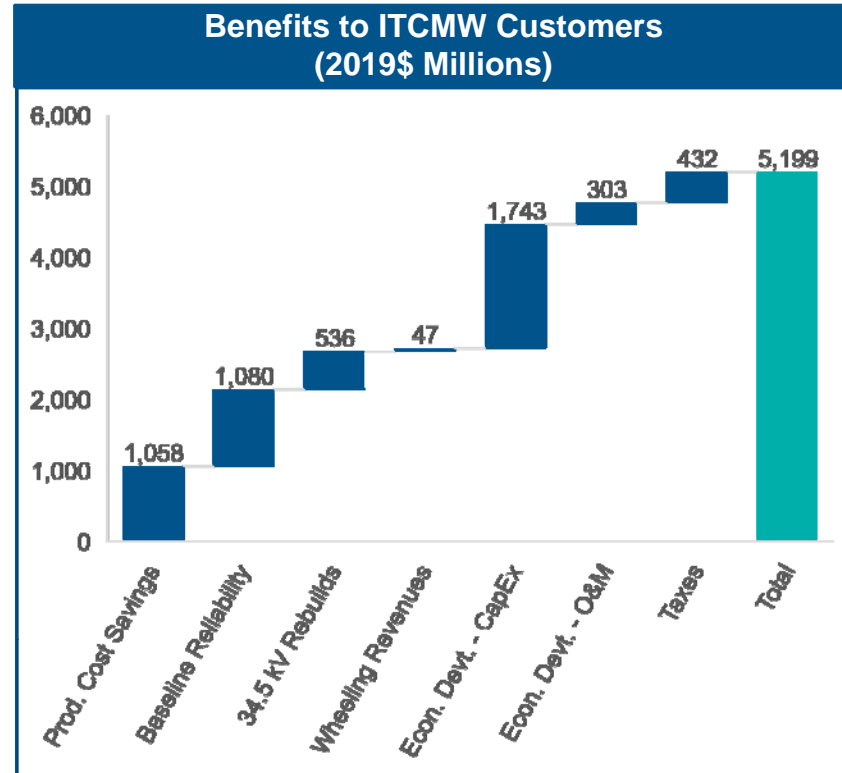
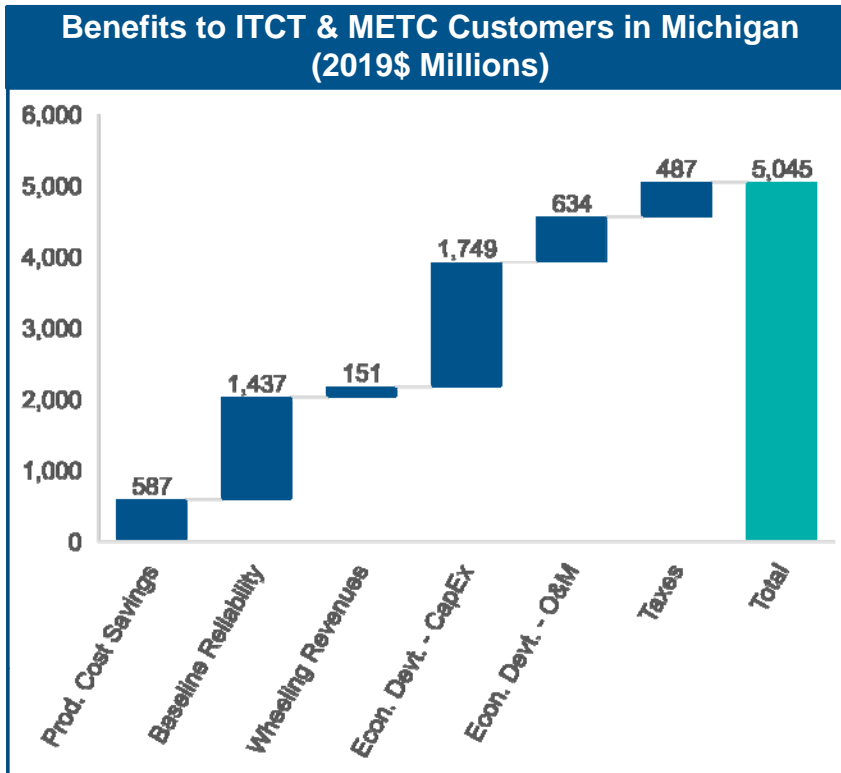


3,790
 Job-years supported in Kansas and Oklahoma as a result of ITC's CapEx and O&M investments over the 2008 to 2017 study period

Based on savings and gross output, benefits from ITC's investments to consumers in SPP exceed \$670M. This includes production cost savings, the value of reliability improvements, higher local economic activity, and higher tax revenues (federal, state, and local). Many of these benefits will continue to accrue to ITC's customers over the service life of the assets, which is typically 40 or more years. CapEx, O&M, and tax impacts include small spillovers from MISO investments.

Approximately 3,790 job-years were supported in states within SPP as a result of ITC's CapEx and O&M investments. This is an average of approximately 380 jobs annually.

Total Benefits – ITC Michigan and ITCMW

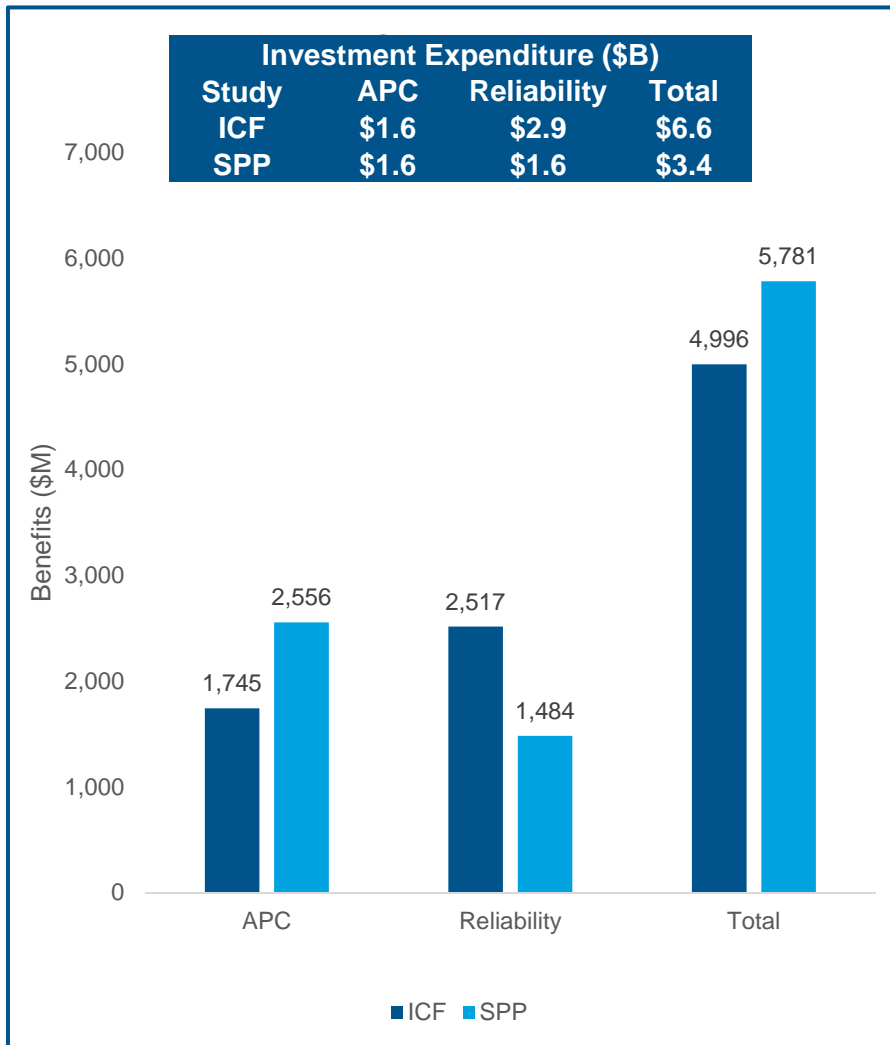


Benefits in the form of savings and gross economic output to ITC’s customers in Michigan and the ITCMW service territory were approximately \$5.0B and \$5.2B, respectively. Many of these benefits will continue to accrue to ITC’s customers over the service life of the projects. CapEx, O&M, and tax impacts include small spillovers from SPP investments.

In addition, 25,400 job-years were supported in Michigan as a result of ITC’s CapEx and O&M investments. Similarly, 23,000 job-years were supported in the ITC service territory as a result of ITC’s investments.

What Others Have Said – SPP Transmission Study

Range of ICF Results Is Similar to 2016 SPP Value of Transmission Study



ICF validated its results by comparing to recent studies that were similar in scope. The chart compares the results of ICF’s study to the 2016 SPP Value of Transmission Study.

The range of benefits calculated in the SPP study is similar to ICF’s study, considering differences in factors such as timing of builds. This demonstrates the reasonableness of ICF’s results.

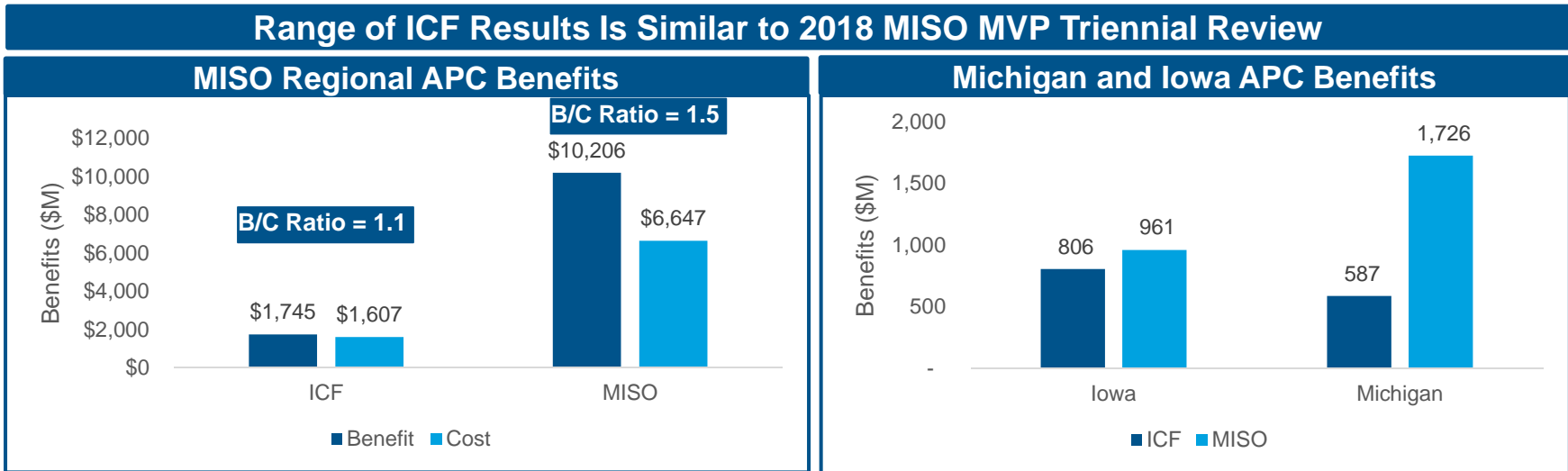
In that study SPP evaluated the benefits of transmission investments made between 2012 and 2014. The chart summarizes the APC and reliability benefits over the first 10 years.

While most projects in ICF’s study were completed between Years 3 and 8 of the study, all of the projects in the study were completed at the start of 10-year period. The APC benefits accrued over a longer period in the SPP study, resulting in relatively higher APC benefits.

ITC reliability investments are almost twice that of SPP, leading to relatively higher reliability benefits.



What Others Have Said – MISO MVP Review



ICF’s results are also consistent with MISO’s projection of the value of the MVP portfolio, given differences in scope and scale of projects. MISO calculated the regional benefits of the MVP portfolio for the 20-year period starting in 2023. The charts show values for the first 10 years. ICF limited its evaluation of benefits of the MVPs to the projects owned by ITC.

The APC benefits in the MISO study are relatively higher than that in the ICF study. The cost of MISO’s MVP portfolio was \$6.6B, and it is expected to provide production cost savings of \$10B over the first 10 years. The benefit-to-cost (B/C) ratio is 1.5, compared with 1.1 for the ITC projects. ICF’s assessment of APC benefits in Michigan is also significantly lower than the MISO study.

The differences might be explained by the fact that in MISO’s study the entire MVP portfolio was operational at the start of the study period, while most of the ITC projects analyzed in the ICF study were completed between Years 3 and 8 of the study period. The Thumb Loop MVP is in operation during only the second half of the study period in the ICF study. Therefore, the APC benefits accrue over a longer period in the MISO study.

Benefits might also be higher in the MISO study because of the presence of future renewable builds not available in the ITC study. This is an indication of the potential for significant future benefits from ITC’s projects.



What Others Have Said – Regional Economics Benefits

ICF's estimated economic benefits in terms of investment dollars per job are in the same range as similar studies:

- Combined ITC CapEx and O&M investments total \$7,483M
- Total job-years created or supported of 52,000

Results in investment dollars per job of \$142,533.

ICF compared its estimates to a host of other studies:

- Two previous ITC studies (Strategic Economics Group)
 - ITCMW 2008-2012
 - ITCMW MVP 3 and 4
- Five other transmission expansion studies
- Most studies use IMPLAN or a combination of JEDI and IMPLAN
- While assumptions/modeling situations may vary, \$/job-year estimates range from \$82,500 to \$170,000

Thus, this study's overall findings are well within the range of what other studies have found in similar contexts.

Key Findings and Conclusions





Conclusions

Through their investments in transmission infrastructure, ITC's operating companies have provided significant benefits to customers in MISO and SPP, and specifically to Michigan, Iowa, Oklahoma, Kansas, Minnesota, and Illinois.

ICF analyzed and quantified four major categories of benefits provided by ITCGP, ITCMW, ITCT, and METC from 2008 to 2017:

- Production cost savings
- Reliability improvements
- Regional economic activities
- Other benefits

Over the 10-year period, ITC's investments have provided a value in excess of \$10.3B to customers in the six states. This is over \$1B a year on average.

In addition, through these investments ITC helped support more than 52,000 job-years, or an average of over 5,200 jobs per year.

Transmission assets last for decades, and many of these benefits will continue to accrue to customers over the service life of the assets, which is typically 40 or more years.



