



IL EE Stakeholder Advisory Group

Non-Energy Impacts Working Group

March 5, 2020





Agenda

- 1** | Recap Prior NEI Working Group Meeting
- 2** | Economic Impact Methodology Update
- 3** | Revised Findings
- 4** | Future NEI Economic Impact Analysis

Recap Prior NEI Working Group Meeting

Recap of Last SAG NEI Working Group Meeting – November 6, 2019

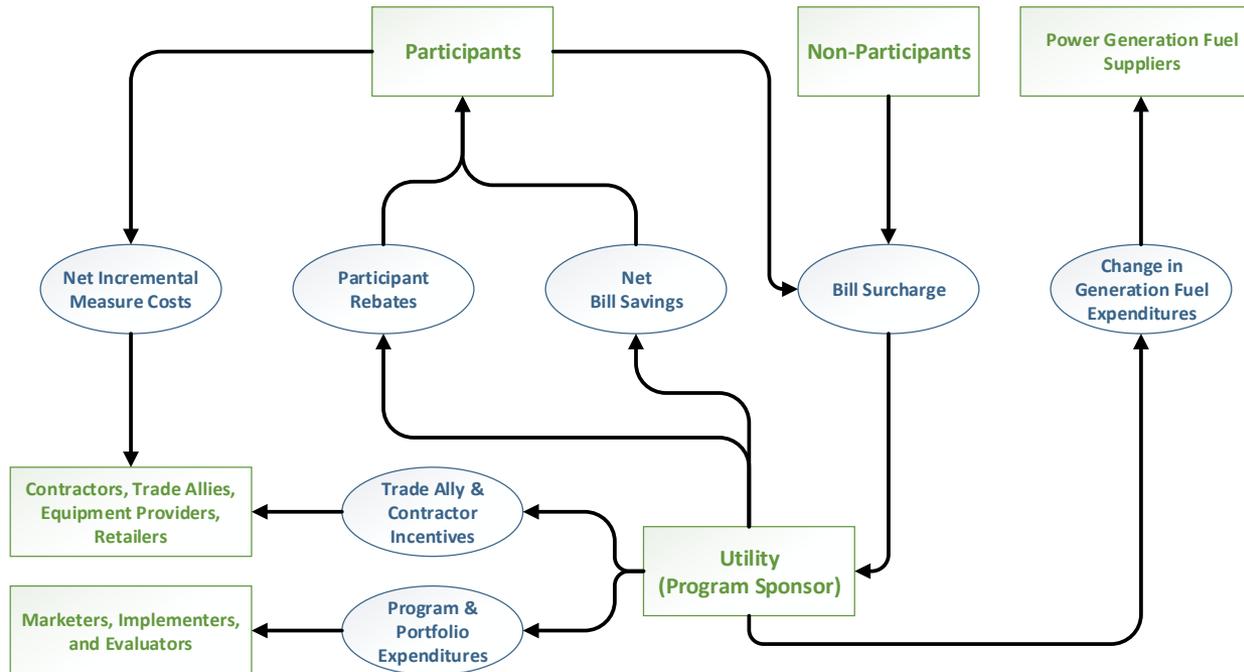
- Guidehouse and Opinion Dynamics presented the methodology used develop economic NEIs at the SAG NEI WG
- Input was noted from several stakeholders that participant bill savings should not entirely be modeled as lost revenue to utilities.
 - Guidehouse and Opinion Dynamics agreed that modifications to that aspect of the analysis were needed and would update the methodology.
- Nicor Gas is working with Navigant to conduct their NEI economic impact analysis.
- Peoples Gas and North Shore Gas are in discussions with Navigant to conduct an NEI economic impact analysis.

Economic Impact Methodology Update

Overview of NEI Economic Impact Analysis

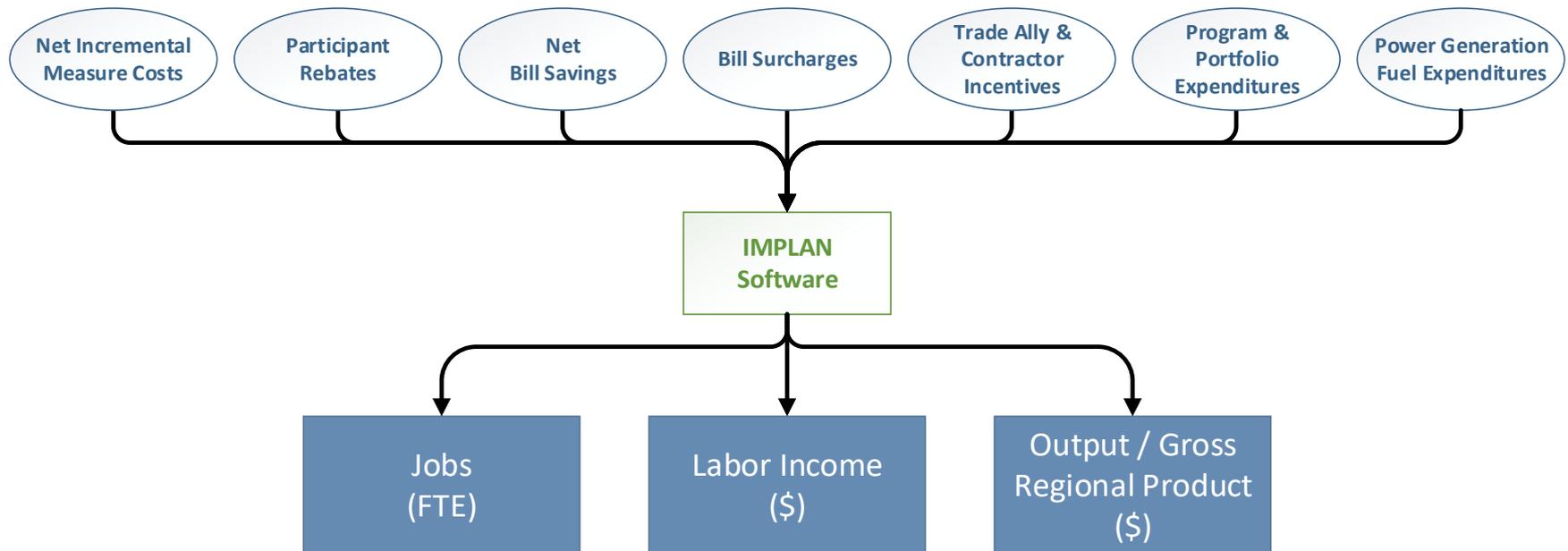
- Objectives:
 - Assessment of economic impacts, including employment, from EE programs on the Illinois economy
 - Assessment of the statewide impacts from utility programs on Illinois
 - To the degree possible, assessment of localized impacts of Illinois EE programs
- Economic Impacts (including job creation) are only part of the overall impact that EE programs have on the State of Illinois and utility customers – participants and non-participants. This analysis is specific to the economic aspects of EE programs and does not encompass societal impacts or utility-specific financial metrics (benefit-cost metrics). This analysis strictly provides insight into the effects that EE programs have on the Illinois economy.
- Analysis is based on the portfolio of programs implemented during the 2018 calendar year with impacts occurring over the life of each measure – up to 25 years. All impacts are based on the Net Present Value of those impacts.

Overview of NEI Economic Impact Analysis



- Comprehensive approach to the economic transactions throughout the lifecycle of EE programs
- Includes **positive** economic impacts (e.g., Net Bill Savings) and **negative** economic impacts (e.g., Bill Surcharge)
- Economic impacts are associated with the applicable industry classification

Economic Impact Assessment Methodology – Overview



Three Step Process:

1. Data Collection – Economic activities of EE programs
2. Modeling – IMPLAN Software
3. Analysis of Output – Summarize and assess IMPLAN model output (Jobs, Labor Income, Output)

Economic Impact Assessment Methodology – Modeling Approach

Each category of economic impact has been aligned with the sectors of the economy that most closely align with them.

Household Impacts

- All households with representative weighting applied to each income level

Income Qualified Impacts

- Households with an annual income less than \$40k

Business Impacts

- All businesses – excluding utilities – weighted for economic output within utility territory

Net Incremental Measure Cost Impacts

- Retailers of Building Materials and Appliances

Utility Impacts

- Power Generation Fuel Procurement for Electric Utilities
- Natural Gas Supply Procurement for Gas Utilities

Revised Findings

Summary of Input Data for Economic Impacts – Commonwealth Edison

Impact Category	Amount		Impacted Segments	
Residential Bill Savings	\$514.0 M	+	Households	
Income Eligible Bill Savings	\$83.3 M	+	Income Eligible Households	
Business Bill Savings	\$921.2 M	+	Businesses	
Lost Electric Utility Fuel Expenditures	\$44.3 M	-	Fossil Fuel Production and Transportation	
Lost Gas Utility Fuel Expenditures	-\$2.9 M	-	Natural Gas Production and Transportation	
Residential Incentives and Rebates	\$58.5 M	+	Households	
Income Eligible Incentives and Rebates	\$20.8 M	+	Income Eligible Households	
Business Incentives and Rebates	\$126.6 M	+	Businesses	
Residential Net Incremental Measure Costs	\$77.6 M	-	+	Retailers and Suppliers
Income Eligible Net Incremental Measure Costs	\$23.9 M	-	+	Retailers and Suppliers
Business Net Incremental Measure Costs	\$394.5 M	-	+	Retailers and Suppliers
Residential Program Administration Costs	\$29.7 M	+	Electric Utilities	
Income Eligible Program Administration Costs	\$11.8 M	+	Electric Utilities	
Business Program Administration Costs	\$46.9 M	+	Electric Utilities	
Residential and Income-Eligible Program Funding (Bill Surcharges)	\$120.8 M	-	All Households	
Business Program Funding (Bill Surcharges)	\$173.5 M	-	Businesses	

Summary of Input Data for Economic Impacts – Commonwealth Edison

Impact Category	Utility Territory	Rest of State	Statewide Total
Jobs Created	14,980 Jobs	71 Jobs	15,051 Jobs
Labor Income	\$895.2 M	\$3.6 M	\$898.8 M
Economic Output	\$3,018.1 M	\$16.2 M	\$3,034.3 M

- Shift from capital-intensive industries and imported commodities (e.g., Fossil Fuel Production) to labor-intensive industries (e.g., Retail) leading to an increased number of jobs and labor income.
- Households in the ComEd territory are less economically connected with the rest of the state than the utilities that serve them (electric, gas, and water), but have a similarly strong spending pattern in their local economy.
- The magnitude of lighting programs within ComEd’s portfolio has led to additional natural gas consumption. This increases natural gas consumption – which contributes more to economic output due to the localized capital intensive nature of utilities.
- Reduced incremental power generation results in fewer imports of fossil fuels from other states.

Summary of Input Data for Economic Impacts – Commonwealth Edison

Top Industries - Employment Impact	
Retail - General merchandise stores	1,123 Jobs
Construction of other new nonresidential structures	483 Jobs
Retail - Building material and garden equipment and supplies stores	476 Jobs
Real estate	443 Jobs
Construction of new single-family residential structures	413 Jobs
Hospitals	326 Jobs
Construction of other new residential structures	304 Jobs
Maintenance and repair construction of nonresidential structures	291 Jobs
Wholesale trade	288 Jobs
Retail - Electronics and appliance stores	282 Jobs

Top Industries - Labor Income Impact	
Construction of other new nonresidential structures	\$35.7 M
Retail - General merchandise stores	\$33.6 M
Wholesale trade	\$30.4 M
Construction of new single-family residential structures	\$28.7 M
Hospitals	\$27.5 M
Retail - Electronics and appliance stores	\$21.6 M
Maintenance and repair construction of nonresidential structures	\$21.3 M
Construction of other new residential structures	\$19.5 M
Management of companies and enterprises	\$19.3 M
Real estate	\$19.3 M

Top Industries - Output Impact	
Real estate	\$111.3 M
Construction of other new residential structures	\$104.5 M
Retail - General merchandise stores	\$87.4 M
Owner-occupied dwellings	\$82.8 M
Wholesale trade	\$80.8 M
Construction of other new nonresidential structures	\$80.1 M
Construction of new single-family residential structures	\$72.5 M
Hospitals	\$57.1 M
Maintenance and repair construction of nonresidential structures	\$53.0 M
Retail - Building material and garden equipment and supplies stores	\$52.3 M

Summary of Input Data for Economic Impacts – Ameren Illinois

Impact Category	Amount		Impacted Segments	
Residential Bill Savings	\$103.7 M	+	Households	
Income Eligible Bill Savings	\$10.8 M	+	Income Eligible Households	
Business Bill Savings	\$230.5 M	+	Businesses	
Lost Electric Utility Fuel Expenditures	\$6.1 M	-	Fossil Fuel Production and Transportation	
Lost Gas Utility Fuel Expenditures	\$1.4 M	-	Natural Gas Production and Transportation	
Residential Incentives and Rebates	\$16.4 M	+	Households	
Income Eligible Incentives and Rebates	\$21.7 M	+	Income Eligible Households	
Business Incentives and Rebates	\$32.1 M	+	Businesses	
Residential Net Incremental Measure Costs	\$11.8 M	-	Households	+
Income Eligible Net Incremental Measure Costs	\$11.8 M	-	Income Eligible Households	+
Business Net Incremental Measure Costs	\$26.4 M	-	Businesses	+
Residential Program Administration Costs	\$26.4 M	+	Electric Utilities	
Income Eligible Program Administration Costs	\$84.6 M	+	Electric Utilities	
Business Program Administration Costs	\$84.6 M	+	Electric Utilities	
Residential and Income-Eligible Program Funding (Bill Surcharges)	\$18.6 M	-	All Households	
Business Program Funding (Bill Surcharges)	\$9.5 M	-	Businesses	

Summary of Input Data for Economic Impacts – Ameren Illinois

Impact Category	Utility Territory	Rest of State	Statewide Total
Jobs Created	2,958 Jobs	236 Jobs	3,194 Jobs
Labor Income	\$135.4 M	\$17.2 M	\$152.5 M
Economic Output	\$553.0 M	\$46.3 M	\$599.3 M

- Shift from capital-intensive industries and imported commodities (e.g., Fossil Fuel Production) to labor-intensive industries (e.g., Retail) leading to an increased number of jobs and labor income.
- Households in the Ameren Illinois territory are more economically connected with the rest of the state than the utilities that serve them (electric, gas, and water).
- Households in the Ameren Illinois territory spend a lower portion of their money within Illinois than their utilities. This is primarily due to the proximity of Ameren’s territory to a number of major cities located near the Illinois state line, but in adjacent states. This leads households to spend a higher portion of their expenditures outside of Illinois.

Summary of Input Data for Economic Impacts – Ameren Illinois

Top Industries - Employment Impact	
Retail - General merchandise stores	366 Jobs
Retail - Building material and garden equipment and supplies stores	151 Jobs
Construction of other new nonresidential structures	127 Jobs
Construction of new single-family residential structures	103 Jobs
Construction of other new residential structures	80 Jobs
Maintenance and repair construction of nonresidential structures	77 Jobs
Wholesale trade	67 Jobs
Real estate	55 Jobs
Hospitals	49 Jobs
Limited-service restaurants	48 Jobs

Top Industries - Labor Income Impact	
Retail - General merchandise stores	\$10.2 M
Construction of other new nonresidential structures	\$7.3 M
Retail - Building material and garden equipment and supplies stores	\$5.8 M
Construction of new single-family residential structures	\$5.5 M
Construction of other new residential structures	\$4.4 M
Maintenance and repair construction of nonresidential structures	\$4.4 M
Wholesale trade	\$3.8 M
Hospitals	\$3.2 M
Offices of physicians	\$2.7 M
Maintenance and repair construction of residential structures	\$2.4 M

Top Industries - Output Impact	
Retail - General merchandise stores	\$27.5 M
Construction of other new residential structures	\$26.0 M
Construction of other new nonresidential structures	\$18.1 M
Retail - Building material and garden equipment and supplies stores	\$16.1 M
Construction of new single-family residential structures	\$15.5 M
Owner-occupied dwellings	\$13.4 M
Wholesale trade	\$13.3 M
Maintenance and repair construction of nonresidential structures	\$12.3 M
Insurance carriers	\$9.6 M
Real estate	\$8.5 M

Combined Statewide Economic Impacts

Impact Category	Statewide Total
Jobs Created	18,245 Jobs
Labor Income	\$1,051.3 M
Economic Output	\$3,633.6 M

Top Industries - Employment Impact	
Retail - General merchandise stores	1,575 Jobs
Real estate	736 Jobs
Retail - Building material and garden equipment and supplies stores	665 Jobs
Construction of other new nonresidential structures	630 Jobs
Wholesale trade	604 Jobs
Construction of new single-family residential structures	533 Jobs
Full-service restaurants	532 Jobs
Hospitals	508 Jobs
Maintenance and repair construction of nonresidential structures	506 Jobs
Employment services	505 Jobs

Top Industries - Labor Income Impact	
Wholesale trade	\$46.3 M
Retail - General merchandise stores	\$30.8 M
Construction of other new nonresidential structures	\$26.4 M
Hospitals	\$44.5 M
Management of companies and enterprises	\$60.4 M
Maintenance and repair construction of nonresidential structures	\$35.4 M
Construction of new single-family residential structures	\$14.5 M
Real estate	\$41.9 M
Retail - Building material and garden equipment and supplies stores	\$35.8 M
Offices of physicians	\$20.9 M

Top Industries - Output Impact	
Real estate	\$121.6 M
Wholesale trade	\$179.4 M
Owner-occupied dwellings	\$72.6 M
Construction of other new residential structures	\$101.6 M
Retail - General merchandise stores	\$163.8 M
Construction of other new nonresidential structures	\$91.1 M
Construction of new single-family residential structures	\$29.3 M
Maintenance and repair construction of nonresidential structures	\$87.8 M
Hospitals	\$90.2 M
Insurance carriers	\$41.7 M

Future NEI Economic Impact Analysis

Approaches for Future Annual NEI Economic Impact Analysis

- Multiple options for estimating NEI economic impacts each year – depend on the degree of rigor and granularity desired
- For discussion, below are three approaches for annual economic impact analysis:
 1. IMPLAN Modeling
 - Pros: Most rigorous and in-depth approach, annually updated economic data
 - Cons: Most expensive, model only changes as much as the structure of the economy – which can be minimal on a year-to-year basis, requires advanced knowledge of IMPLAN model
 2. Spreadsheet Economic Impact Tool (e.g., NREL JEDI)
 - Pros: Ability to tailor analysis to portfolio design without building IMPLAN models, simplified analysis that can be run by utilities and portfolio evaluators
 - Cons: Limited ability to customize analysis, data licensing for underlying economic data
 3. Deemed Values
 - Pros: Simplest approach, similar approach to established approaches for deemed savings
 - Cons: Could oversimplify impacts of some programs, limited insight into industries impacted and underlying economic effects

Questions & Feedback

Economic Impact Assessment Methodology – *IMPLAN*

IMPLAN is a regional economic analysis software application that is designed to estimate the impact or ripple effect (specifically backward linkages) of a given economic activity within a specific geographic area through the implementation of its Input-Output (I-O) model. The following are assumptions within any I-O Model:

- Constant returns to scale
- No supply constraints
- Fixed input structure
- Industry technology assumption
- Constant byproducts coefficients
- The model is static

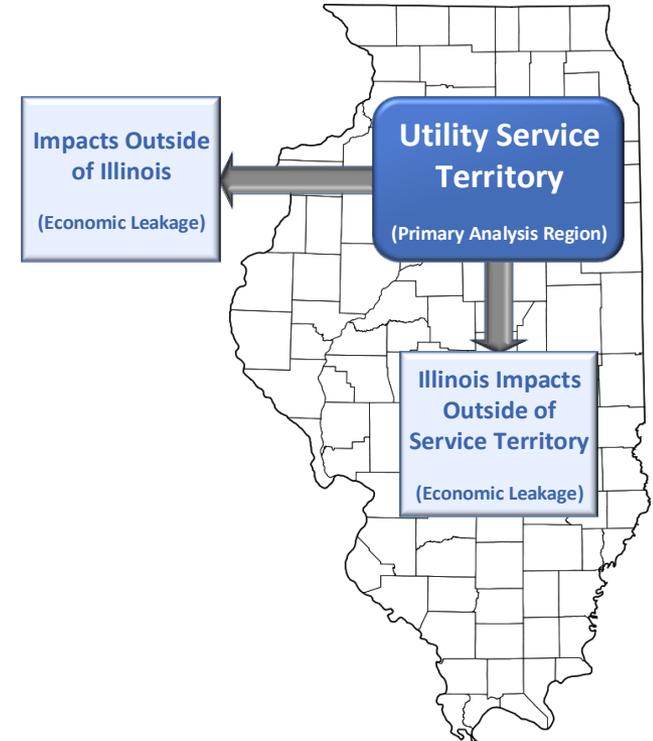
By design, the following key limitations apply to Input-Output Models, such as IMPLAN, and should be considered:

- **Feasibility:** The assumption that there are no supply constraints and there is fixed input structure means that even if input resources required are scarce, IMPLAN will assume it will still only require the same portion of production value to acquire that input, unless otherwise specified. The assumption of no supply constraints also applies to human resources, so there is assumed to be no constraint on the talent pool from which a business or organization can draw.
- **Backward-linked and Static model:** I-O models do not account for forward linkages, nor do I-O models account for offsetting effects such as cannibalization of other existing businesses, diverting funds used from other potential or existing projects.
- **Like the model, prices are also static:** Price changes cannot be modeled an I-O model directly; instead, the final demand effects of a price change must be estimated before modeling them in IMPLAN to estimate the additional economic impacts of such changes.

For more information on the IMPLAN modeling process, visit IMPLAN.com.

Economic Impact Assessment Methodology – Geography of Impacts

- For utility EE programs, economic impacts occur in one of three locations:
 1. Within the utility's service territory
 2. Outside the utility's service territory – but within Illinois
 3. Outside of Illinois
- Analysis implements a Multi-Regional Input-Output (MRIO) within IMPLAN to estimate impacts that happen within the utility service territory (#1) and elsewhere in Illinois (#2).
- The MRIO approach simplifies the aggregation of impacts across utilities within Illinois by standardizing the defined geographies
- A portion of the total economic impacts happen outside of Illinois, but are not explicitly estimated within the modeling framework due to the additional costs for economic data covering regions outside of Illinois
- Approaches for estimating impacts at the community level have been explored, but would require localized inputs that go far beyond the level of detail that is required for other analysis. It is also more expensive to acquire the underlying economic data for more granular regions. Due to these factors, it is not feasible within the current scope.



Types of Economic Impacts

- **Direct Impacts:** Impacts resulting from changes in demand for industry output/commodities, household income, or spending patterns.
- **Indirect Impacts:** Impacts from business-to-business transactions resulting from the direct impact.
- **Induced Impacts:** Impacts from household spending from changes in labor income.
- **Total Impacts:** Sum of Direct, Indirect, and Induced impacts.
 - All impacts references in this presentation are total impacts. Including changes in employment, labor income, and economic output.

