Economic and tax contributions of Duke Energy's clean energy transition capital expenditures (2023-2032)

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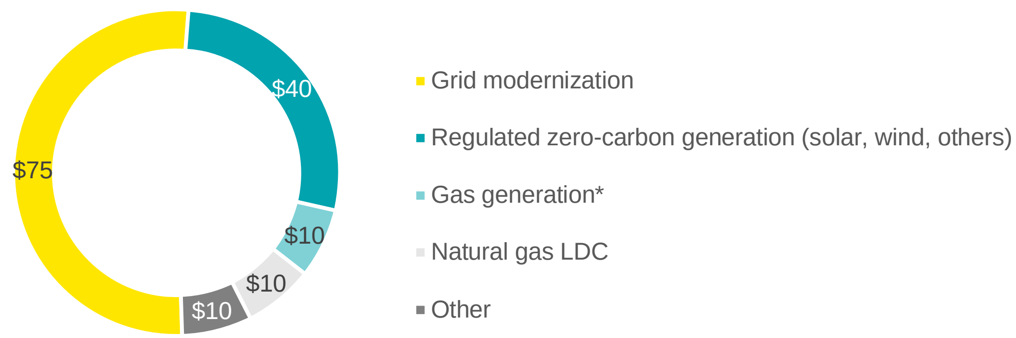
Building a better working world

Contents

Executive summary

EY was engaged by Duke Energy Corporation (Duke Energy) to estimate the economic and tax contributions of planned capital investments in clean energy transition and grid modernization projects in the years 2023 through 2032. Duke Energy is planning to spend between $143 billion and $151 billion over the next decade. The analysis presented in this report uses a midpoint of $145 billion which will be spent in grid modernization ($75 billion), regulated zero-carbon generation from solar, wind, and other sources ($40 billion), natural gas LDC ($10 billion) and generation ($10 billion), and other expenses ($10 billion). These capital expenditures are referred to in this report as Duke Energy's "clean energy transition capital expenditures" and are shown in Figure ES-1 below.

Figure ES-1. Duke Energy's planned clean energy transition capital expenditures of $145 billion by category (2023-2032)
Billions of 2022 dollars



Note: *Gas generation includes new gas generation and maintenance. Figures may not appear to sum due to rounding.
Source: Data provided by Duke Energy management

This report estimates the direct, indirect and induced economic and tax contributions of Duke Energy's planned capital investments in clean energy projects using the 2019 IMPLAN input-output model. The analysis includes three types of economic and tax contributions:

(1) **Direct economic contributions** due to the building and maintenance of clean energy generation and transmission. Employment that supports these efforts could be supplied by existing Duke Energy employees, current contractors and new hires. The direct employment, labor income, GDP, output and taxes reflect the activity of building new clean energy power generation and transmission/distribution.

(2) **Indirect economic contributions** of employment, labor income, GDP, output, and taxes resulting from purchases from US suppliers by Duke Energy. For example, these suppliers include manufacturers of building materials.

(3) **Induced economic contributions** of employment, labor income, GDP, output, and taxes resulting from spending by Duke Energy employees, contractor employees and their suppliers. For example, induced economic contributions are due to expenditures by employees on goods and services such as groceries, clothing, gasoline, restaurant meals and health care services.

Table ES-1 shows the estimated economic contributions related to Duke Energy's clean energy transition capital expenditures. Over the next decade, capital expenditures will support, on average, nearly 50,000 direct jobs nationwide and an additional 79,000 jobs through indirect (supplier) and induced (consumer) activity. The more than 128,000 jobs supported annually will earn an estimated $91.6 billion in labor income (wages and benefits) from 2023 to 2032. In addition to jobs and labor income, Duke Energy's capital expenditures will support nearly $140 billion in GDP contributions and nearly $250 billion in economic output once indirect and induced activity is included.

Table ES-1. Total economic contributions of Duke Energy's clean energy transition capital expenditures, 2023-2032)

Number of average annual jobs, Billons of 2022 dollars

	Direct	Indirect	Induced	Total contributions
Average annual employment	49,710	27,790	50,920	**128,420**
Labor income (10-year total)	$42.1	$21.1	$28.4	**$91.6**
GDP (10-year total)	$53.4	$35.5	$51.0	**$139.9**
Economic output (10-year total)	$79.6	$79.3	$90.4	**$249.3**

Note: Figures may not appear to sum due to rounding. Figures shown are the cumulative economic contributions over the capital spend period. Table ES-3 shows the average incremental contributions above current (2022) baseline.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management.

The clean energy transition and grid modernization capital expenditures will also generate tax revenue for state and local jurisdictions. Table ES-2 details the state and local tax contributions from Duke Energy's planned capital spend. Taxes include property taxes from new real and personal property, sales taxes due to purchases of equipment and building materials, individual income taxes on wages and salaries paid to employees, and corporate income, excise, license and other taxes due to taxable income and sales activity generated at supplier and other businesses. Property tax is the largest tax contribution category with $6.7 billion generated during the 10-year period followed by state and local sales taxes at nearly $5 billion.

Table ES-2. State and local tax contributions of Duke Energy's clean energy transition capital expenditures

Cumulative totals for 2023-2032; Millions of 2022 dollars

Tax type	Direct	Indirect	Induced	Total Contributions
Property	$5,237	$633	$834	$6,704
State sales	$3,104	$355	$491	$3,949
Local sales	$779	$113	$148	$1,040
Individual income	$930	$553	$714	$2,196
Corporate income, excise, license	$0	$636	$808	$1,444
Total	**$10,050**	**$2,290**	**$2,994**	**$15,334**

Note: Figures may not sum due to rounding. Property taxes were estimated using effective property tax rates based on Duke Energy's 2020 property costs and values. Sales taxes were calculated using sales tax rates on taxable capital spend. Corporate income, excise, and license taxes were not calculated directly for Duke Energy. Source: EY analysis based on data provided by Duke Energy, US Census Bureau, and the Bureau of Economic Analysis.

The projected economic and tax contributions of Duke Energy's planned capital expenditures on the economy are shown by year in Table ES-3. During the 10-year period, Duke Energy will support between 107,00 and 145,000 jobs each year depending on the level of capital expenditure in a given year. Labor income support varies from $7.8 billion to $10.2 billion with gross domestic product contributions varying from nearly $21 billion to more than $28 billion. State and local tax contributions are close to $1.5 billion annually during the period.

Table ES-3 also shows the average annual economic contributions during the next 10 years and compares it to the level of economic activity supported with Duke Energy's current capital expenditures in 2022. The average annual benefit above 2022 is more than 22,000 total (direct, indirect, and induced) jobs supported, more than $1.5 billion in annual labor income, $2.6 billion in GDP, and $4.7 billion in gross economic output.

Table ES-3. Total economic contributions of Duke Energy's clean energy transition capital expenditures by year

Number of annual jobs, Billions of 2022 dollars

	Employment (annual)	Labor income	GDP	Gross economic output	State and local taxes
Baseline 2022	105,670	$7.6	$11.4	$20.2	n/a**
2023	109,750	$7.9	$11.8	$20.9	$1.3
2024	107,320	$7.8	$11.7	$20.7	$1.3
2025	109,720	$7.9	$11.9	$21.1	$1.3
2026	118,130	$8.4	$12.8	$22.7	$1.3
2027	141,680	$9.9	$15.1	$26.9	$1.6
2028	138,150	$9.8	$14.9	$26.7	$1.6
2029	145,360	$10.2	$15.7	$28.1	$1.8
2030	141,960	$10.1	$15.6	$27.8	$1.8
2031	135,920	$9.8	$15.1	$27.2	$1.7
2032	136,230	$9.8	$15.2	$27.3	$1.7
Total (10-year)	**128,420***	**$91.6**	**$139.9**	**$249.3**	**$15.3**
Average Annual	**128,420***	**$9.2**	**$14.0**	**$24.9**	**$1.5**
Average annual increment above baseline (2022)	**22,750**	**$1.5**	**$2.6**	**$4.7**	**n/a**

Note: * Average annual employment across the investment period is 128,420. **EY does not have an estimate of state and local taxes on 2022 capital expenditures. Figures may not appear to sum due to rounding.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management.

1. Methodology and data

1.1 Economic contribution methodology

Duke Energy is planning to spend between $143 billion and $151 billion over the next decade in clean energy transition projects including investment in grid modernization, regulated zero-carbon generation (solar, wind, others), gas generation and distribution, and other expenses. The analysis presented in this report used $145 billion of expenditures. Each spend category is an aggregation of various subcategories:

- **Grid modernization** includes new customer additions and grid modernization capital expenditures.
- **Zero-carbon generation** includes nuclear and SMR nuclear, solar, battery, wind, and hydropower related expenditures.
- **Natural gas LDC** includes only activities related to local distribution companies.
- **Gas generation** includes new natural gas generation and maintenance.
- **Other expenses** include coal maintenance and the coal ash program and the corporate activities needed to support the energy transition.

This analysis uses an input-output model to estimate the economic contributions of capital investment in Duke Energy's transition to clean energy. The economic contributions in this study were estimated using the 2019 IMPLAN input-output model. IMPLAN is used by more than 500 universities and government agencies. Unlike other economic models, IMPLAN includes the interaction of 546 industry sectors, thus identifying the interaction of specific industries that relate to the projects studied in this report.

Total contributions presented in this report include direct, indirect and induced effects. Direct effects include employment and spending by Duke Energy and its contractors. Indirect effects are attributable to purchases from local suppliers. Induced effects are attributable to spending by direct and indirect employees, based on regional household spending patterns for different levels of income.

Indirect and induced effects are driven by (1) input purchases by Duke Energy and its suppliers; (2) the percentage of each type of commodity that is purchased from within the state(s); and (3) household consumption profiles for Duke Energy employees and its contractors and suppliers.

Duke Energy provided data regarding the capital spend to transition to clean energy across seven states (Florida, Indiana, Kentucky, North Carolina, Ohio, South Carolina and Tennessee). The spend by Duke Energy as it makes the clean energy transition will support employment, income, GDP and economic output across the states were the spend will occur as well as the broader US through indirect and induced effects.

- **Direct economic contributions** due to the building and maintenance of clean energy generation and grid modernization. Employment that supports these efforts could be supplied by existing Duke Energy employees, current contractors and new hires. The direct employment, labor income, GDP, output, and taxes reflect the activity of building new clean energy power generation and transmission/distribution.

- **Indirect economic contributions** of employment, labor income, GDP, output, and taxes resulting from purchases from US suppliers by Duke Energy. For example, these suppliers include manufacturers of materials.

- **Induced economic contributions** of employment, labor income, GDP, output, and taxes resulting from spending by Duke Energy employees, contractor employees and their suppliers. For example, induced economic contributions are due to expenditures by employees on goods and services such as groceries, clothing, gasoline, restaurant meals and health care services.

Direct, indirect and incuded impacts of Duke Energy's capital investment were measured across given economic indicators using the 2019 IMPLAN economic model and reported in 2022 dollars. Figure 1 illustrates the relationship between the key economic impact measures.

- **Employment.** Employment reflects the total number of part- and full-time jobs (headcount) supported by the construction and maintenance of the clean energy capital plan. Direct employees include Duke Energy current employees, contractors and potential new hires.

- **Labor income.** Labor income is a component of GDP and includes employee compensation (value of wages and benefits) and proprietor income. The analysis includes income received directly by Duke Energy employees and contractors, and income related to indirect and induced employees.

- **Gross Domestic Product (GDP).** GDP, or value added, is a component of economic output and includes labor income, payments to capital and indirect taxes.

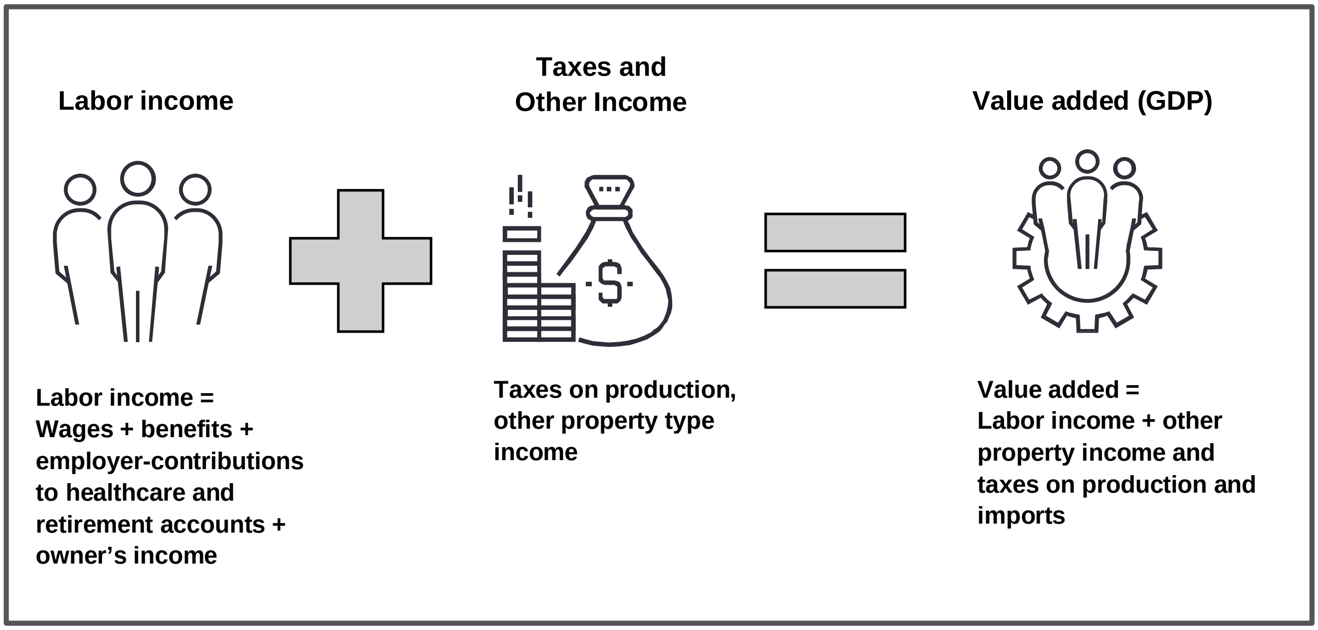
- **Economic output.** Economic output is the broadest measure of economic activity and includes Gross Domestic Product and intermediate input purchases from suppliers. For most industries, economic output is equivalent to total reveneus (production value).

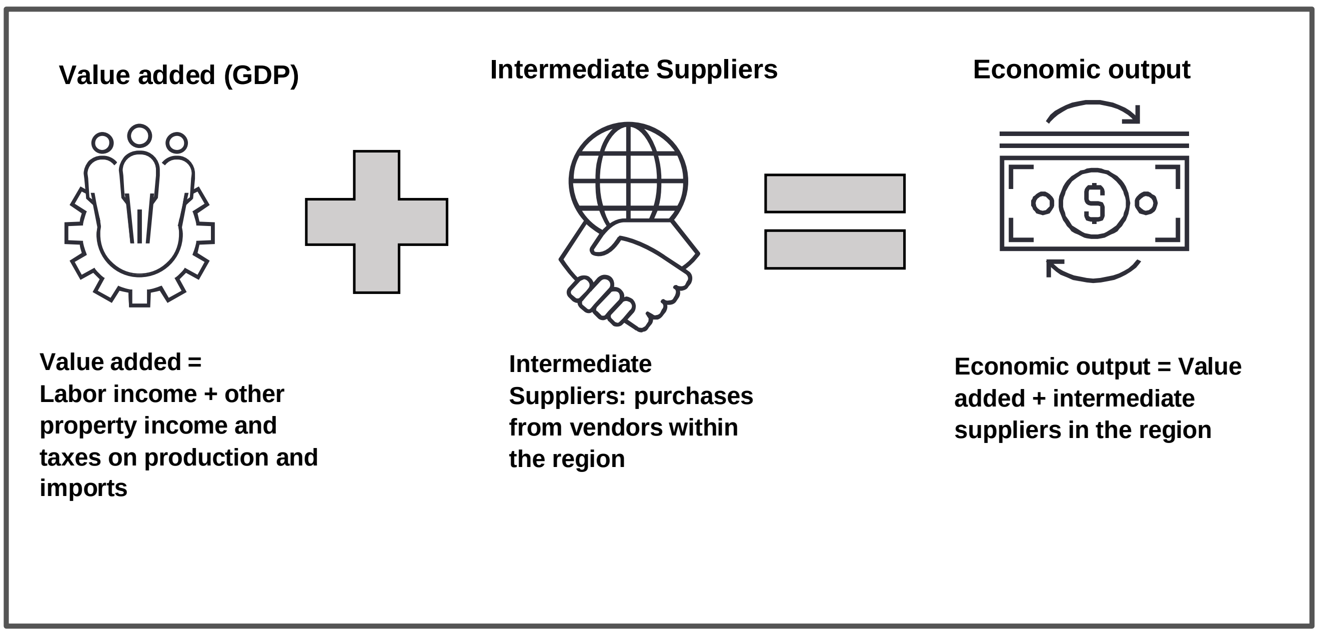
- **State and local taxes.** Estimated tax impacts include property, sales, individual income, corporate income, excise and license taxes at the state and local level.

This analysis used annual capital expenditure projections from Duke Energy at the state level to estimate the economic and tax contributions. In order to estimate the contributions the capital expenditures will have on the surrounding states, a Multi-Regional Input-Output (MRIO) Analysis was used. This approach simlutaneously captures how the direct expenditures affect the state economy as well as the broader US economy.

An additional key aspect of the analysis was the use of the Regional Purchasing Coefficient (RPC). The RPC uses purchaser data to estimate the amount of demand met by local suppliers. The assumption is that not all demand will be met by the local economy, and in some cases, would be met by firms outside of the United States through imported goods.

Figure 1. Overview of economic impact measurements





1.2 Tax contribution methodology

State and local taxes were estimated using information provided by Duke Energy management and data from federal, state and local government sources.

- Direct individual income tax and all indirect and induced taxes were estimated based on the historical relationship between state and local tax revenue collections (by tax type) and personal income in the state(s) in which the investment is planned to take place or the expenditure is expected to occur. This ratio was then used to estimate taxes based on labor income supported by Duke Energy's capital spend.[1]

- Direct business property taxes were estimated using historic (2020) effective property tax rates on capital expenditures by state from Duke Energy management. The effective tax rate captures the relationship between actual taxes paid by Duke Energy in local jurisdictions compared to the expenditures made by the company for new property. The effective tax rates were multiplied by Duke Energy's planned capital expenditures to estimate the new property taxes paid in a future typical year based on the company's historic property taxes.

- Direct state and local sales taxes were estimated by mutliplying the relevant tax rate by the expected taxable portion of Duke Energy's capital purchases. Sales tax was not applied to goods or services anticipated to qualify for an exemption under current state statutues.

- The estimated tax contributions assume current tax structures and rates will remain constant throughout the entirety of the capital spend period.

Duke Energy property taxes associated with the clean energy transition capital plan will support public services such as police, fire, and public education. The analysis in Section 3.3 provides examples of the number of public sector jobs supported if Duke Energy property taxes are solely used for salary support for different types of public sector employees.

- The $5.2 billion in cumulative Duke Energy property tax was divided by 10 years for $524 million annually in estimated property tax contributions between 2023 and 2032. The $524 million was then divided by the average salary of each type of public sector worker to produce the number of public sector jobs supported in an average year of the capital spend period. Data on public sector salaries was assembled from the National Center of Education Statistics and the US Bureau of Economic Analysis.

- It is estimated that Duke Energy will pay $1 billion in annual property taxes after 2032 once all property has been purchased or developed related to the clean energy transition capital plan. The $1 billion in annual property taxes was divided by the average salary of each type of public sector worker to produce the number of public sector jobs supported.

[1] State tax collections by state are provided by the US Census Bureau, and state and county personal income amounts are provided by the Bureau of Economic Analysis.

2. Economic contributions of capital investments

The economic contributions of Duke Energy's planned capital expenditures include a total annual average of 128,420 jobs, $91.6 billion in labor income, $139.9 billion in GDP and $249.3 billion in gross economic output. Table 1 shows the projected total employment, labor income, GDP and economic output supported by the clean energy transition projects.

Table 1. Total (direct, indirect and induced) economic contributions of Duke Energy's clean energy transition capital expenditures by spend category (2023-2032)
Number of average annual jobs; Billions of 2022 dollars

Capital spend category	Average annual employment	Labor Income	GDP	Gross economic output
Grid modernization	70,210	$52.9	$77.1	$139.5
Regulated zero-carbon generation (solar, wind, others)	26,670	$19.2	$33.9	$60.7
Natural gas LDC	13,420	$8.1	$12.3	$21.6
Gas generation	10,400	$6.6	$9.8	$16.1
Other	7,720	$4.8	$6.7	$11.5
Total	**128,420**	**$91.6**	**$139.9**	**$249.3**

Note: Figures may not appear to sum due to rounding. Capital spend category is organized by magnitude of spend.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

2.1 Employment contributions

Table 2 shows the employment impacts related to the $145 billion in capital expenditures over the 10-year period. Jobs are shown as the average annual employment over the period. Each direct job will support 2.6 total jobs due to the indirect and induced multiplier effects. This means that for each direct job, 1.6 additional jobs will be supported throughout the US economy in other sectors. As shown in Table 2, the capital investment activities will support an average of 128,420 jobs per year over the 10-year period.

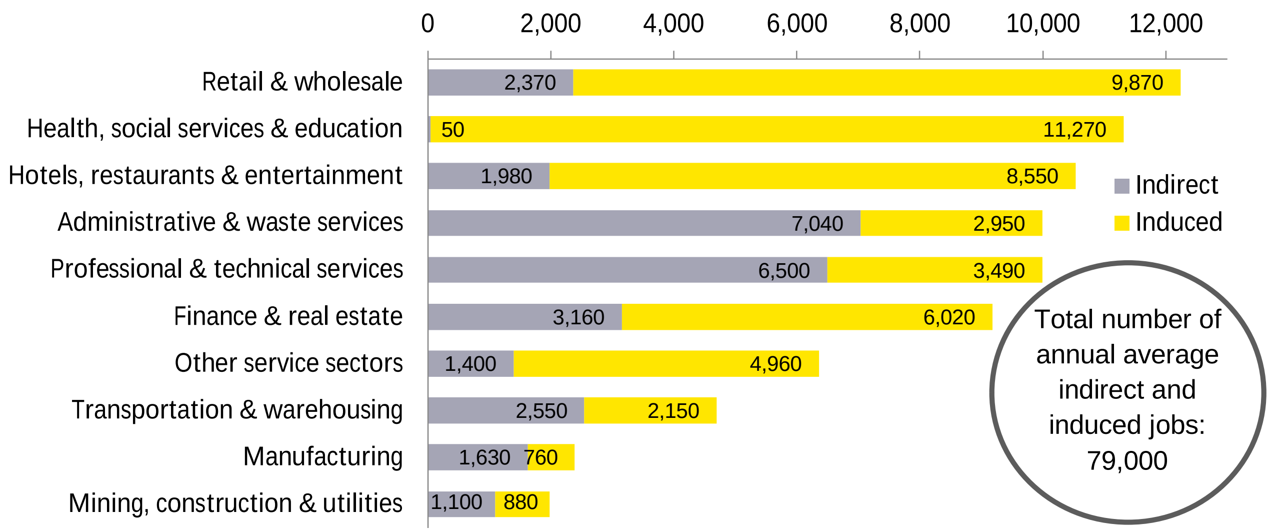
Table 2. Average annual employment supported by Duke Energy's clean energy transition capital expenditures by spend category, (2023-2032)
Number of average annual jobs

Capital spend category	Direct	Indirect	Induced	Total contributions
Grid modernization	20,320	17,200	32,690	70,210
Regulated zero-carbon generation (solar, wind, others)	11,960	5,660	9,050	26,670
Natural gas LDC	7,370	2,230	3,820	13,420
Gas generation	5,930	1,390	3,080	10,400
Other	4,130	1,310	2,280	7,720
Total	**49,710**	**27,790**	**50,920**	**128,420**

Note: Figures may not appear to sum due to rounding. Capital spend category is organized by magnitude of spend.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

Figure 2 illustrates the private industries in which the indirect and induced jobs will be supported. On average, the capital expenditures will support 2,370 indirect and 9,870 induced annual jobs in retail and wholesale service sectors. Jobs within this sector include retail and wholesale jobs at furniture, electronics, clothing, sporting goods, food and beverage, and other general merchandise stores. The health, social services and education sector includes private sector jobs in education, jobs at colleges and universities, as well as physician offices, dental offices, hospitals, nursing homes and childcare services. These jobs are supported as direct and indirect workers spend their paychecks. Figure 2 shows the private sector jobs impact and does not include estimates of public sector jobs (such as elementary public-school teachers).

Figure 2. Average annual indirect and induced employment supported in US economy due to capital expenditures by Duke Energy



Note: Figures may not sum due to rounding; Total indirect and induced employment effects due to planned investments divided by 10; Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

2.2 Labor income contributions

The economic activity from Duke Energy's capital expenditures the next decade will support nearly $91.6 billion in labor income including $42.1 billion of direct labor income and $49.5 billion in labor income for jobs in other industries (indirect and induced jobs). Table 3 shows the labor income contributions by capital spend category with grid modernization projected to have the largest contribution to labor income at nearly $53 billion.

Table 3. Labor income supported by Duke Energy's clean energy transition capital expenditures by spend category, (2023-2032)
Billions of 2022 dollars

Capital spend category	Direct	Indirect	Induced	Total contributions
Grid modernization	$20.0	$13.8	$19.2	$52.9
Regulated zero-carbon generation (solar, wind, others)	$10.5	$4.1	$4.5	$19.2
Natural gas LDC	$4.7	$1.5	$2.0	$8.1
Gas generation	$4.1	$0.9	$1.5	$6.6
Other	$2.8	$0.8	$1.2	$4.8
Total	**$42.1**	**$21.1**	**$28.4**	**$91.6**

Note: Figures may not appear to sum due to rounding. Capital spend category is organized by magnitude of spend.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

2.3 Gross Domestic Product (GDP) contributions

Duke Energy's capital expenditures are estimated to contribute nearly $140 billion in gross domestic product. The largest share of GDP will be supported by investment in grid modernization ($77.1 billion) followed by regulated zero-carbon generation (solar, wind, others) ($33.9 billion) and natural gas LDC ($12.3 billion). Table 4 shows the direct, indirect and induced contributions to GDP by capital spend category.

Table 4. GDP supported by Duke Energy's clean energy transition capital expenditures by spend category, (2023-2032)
Billions of 2022 dollars

Capital spend category	Direct	Indirect	Induced	Total contributions
Grid modernization	$20.9	$22.1	$34.1	$77.1
Regulated zero-carbon generation (solar, wind, others)	$17.5	$8.0	$8.3	$33.9
Natural gas LDC	$6.2	$2.5	$3.6	$12.3
Gas generation	$5.4	$1.5	$2.8	$9.8
Other	$3.3	$1.3	$2.2	$6.7
Total	**$53.4**	**$35.5**	**$51.0**	**$139.9**

Note: Figures may not appear to sum due to rounding. Capital spend category is organized by magnitude of spend.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

2.4 Economic output contributions

The final economic contribution measure included in this report is economic output supported by Duke Energy's clean energy transition capital expenditures. Table 5 below details economic output by spend category across direct, indirect and induced effects. The total direct economic output is estimated to be $79.6 billion over ten years. For indirect and induced activity, economic output is estimated at $79.3 billion and $90.4 billion, respectively. Of the total $249.3 billion in economic output supported by Duke Energy's investment, roughly 56% is supported by investment in grid modernization.

Table 5. Economic output supported by Duke Energy's clean energy transition capital expenditures by spend category, (2023-2032)

Billions of 2022 dollars

Capital spend category	Direct	Indirect	Induced	Total contributions
Grid modernization	$25.7	$52.9	$60.9	$139.5
Regulated zero-carbon generation (solar, wind, others)	$30.1	$16.0	$14.6	$60.7
Natural gas LDC	$10.6	$4.9	$6.2	$21.6
Gas generation	$8.1	$3.0	$4.9	$16.1
Other	$5.1	$2.5	$3.8	$11.5
Total	**$79.6**	**$79.3**	**$90.4**	**$249.3**

Note: Figures may not appear to sum due to rounding. Capital spend category is organized by magnitude of spend.
Source: EY analysis using the IMPLAN input-output multiplier model and data provided by Duke Energy management

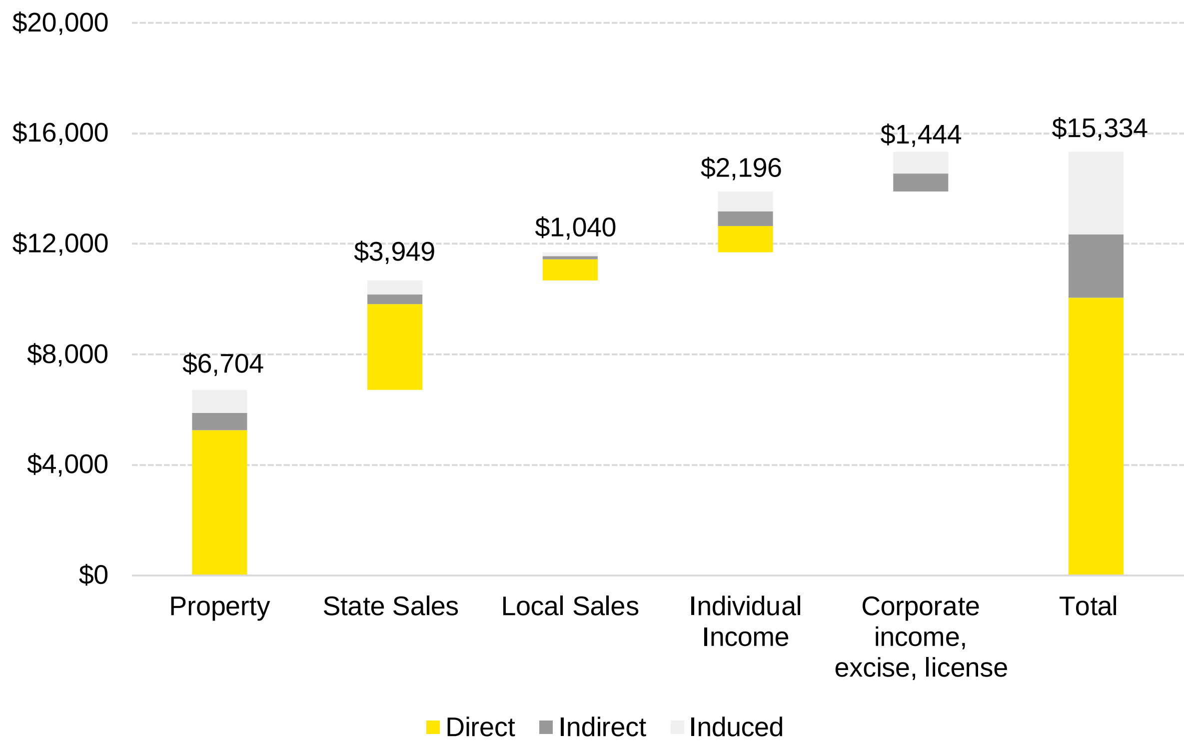
3. Fiscal contributions of clean energy transition capital expenditures

3.1 State and local tax estimates by tax type

In addition to the economic contributions supported by Duke Energy's clean energy transition projects, capital expenditures will generate significant state and local tax contributions. Based on the taxes analyzed by EY, it is estimated that Duke Energy will contribute more than $15.3 billion in state and local taxes during the 10-year period, with $10.1 billion being contributed directly by Duke Energy in the form of property taxes, one-time sales and use taxes on purchases, and employee individual income taxes. The capital expenditures made by Duke will also indirectly generate roughly $2.3 billion in state and local taxes as a result of supplier purchases. The indirect tax impacts will occur in both the state economies where Duke makes investments as well as states where suppliers operate and employees live. The remaining $2.9 billion in taxes will result from induced business activity generated from direct and indirect employee household expenditures across the local economies. Figure 3 illustrates below the breakout of tax contributions by tax type.

Figure 3. Total state and local tax contributions by tax type from clean energy transition capital expenditures, (2023-2032)

Millions of 2022 dollars



Note: Figures may not sum due to rounding.
Source: EY analysis based on data provided by Duke Energy, US Census Bureau, and the Bureau of Economic Analysis

Table 6 provides a detailed breakout of the projected state and local tax contributions by direct, indirect and induced activity for each tax category. The largest share will be in property taxes from new Duke Energy property with total taxes of $5.2 billion during the 10-year period. Property taxes total an estimated $6.7 billion, or 44% of the total tax contributions, when indirect and induced contributions are included. The second largest category for tax contributions is state and local sales taxes due to one-time purchases of taxable equipment and materials. Direct sales tax is estimated to be nearly $3.9 billion. Once sales tax contributed from indirect and induced activity is included, it is estimated that sales tax will total nearly $5 billion. Nearly 80% of sales tax revenue will be generated at the state level with the remaining 20% going to local jurisdictions. Individual income taxes paid by employees on wages and salaries is expected to total nearly $2.2 billion across direct, indirect and induced activities.

Table 6. Enterprise-wide state and local revenue by tax type due to clean energy transition capital expenditures (2023-2032)

Millions of 2022 dollars

Tax type	Direct	Indirect	Induced	Total contributions	% of total
Property	$5,237	$633	$834	$6,704	44%
State sales	$3,104	$355	$491	$3,949	26%
Local sales	$779	$113	$148	$1,040	7%
Individual income	$930	$553	$714	$2,196	14%
Corporate income, excise, license	$0	$636	$808	$1,444	9%
Total	**$10,050**	**$2,290**	**$2,994**	**$15,334**	**100%**

Note: Figures may not sum due to rounding.
Source: EY analysis based on data provided by Duke Energy, US Census Bureau, and the Bureau of Economic Analysis

3.2 Year-by-year state and local tax revenue estimates

Total tax contributions resulting from Duke Energy's clean energy investments, including direct, indirect and induced contributions, are expected to increase consistently between 2023 and 2032. Table 7 reflects the estimated annual contributions by tax type based on Duke Energy's annual projected investments. Annual estimates for all other tax types are distributed based on Duke Energy's annual investments by year. The years which are expected to show the greatest year-over-year change in total tax contributions are 2026-2027, with an expected 24% increase, and 2028-2029, which will experience a 13% increase.

Table 7. Total state and local tax contributions by tax type due to direct, indirect and induced activity, 2023-2032
Millions of 2022 dollars

Year	Property	State Sales	Local sales	Individual income	Corporate income, excise, license	Total
2023	$212	$334	$88	$186	$122	$943
2024	$294	$325	$85	$181	$119	$1,004
2025	$383	$331	$87	$184	$121	$1,106
2026	$477	$346	$91	$192	$126	$1,233
2027	$610	$420	$111	$234	$154	$1,528
2028	$712	$415	$109	$231	$152	$1,619
2029	$840	$453	$119	$252	$166	$1,830
2030	$954	$453	$119	$252	$166	$1,943
2031	$1,061	$446	$118	$248	$163	$2,036
2032	$1,161	$427	$112	$237	$156	$2,093
Total (10-year)	**$6,704**	**$3,949**	**$1,040**	**$2,196**	**$1,444**	**$15,334**

Note: Figures may not sum due to rounding.
Source: EY analysis based on data provided by Duke Energy, US Census Bureau, and the Bureau of Economic Analysis

3.3 Potential public sector benefits

The employment estimates presented so far in this report have been for jobs supported in the private sector. State and local taxes will support public sector jobs in states where Duke is making investments. Property taxes paid by Duke Energy will support essential services such as police and fire, and public education. Table 8 provides context around the potential employment benefits for governments due to property tax revenue from the clean energy projects. Over the 10-year capital investment period, it is estimated that Duke Energy will pay $5.2 billion in property taxes for an average of $524 million annually during this period. Table 8 provides examples of how many public sector salaries can be supported if local property taxes were used to solely support one type of public sector employee (police officers or public-school teachers or fire fighters).

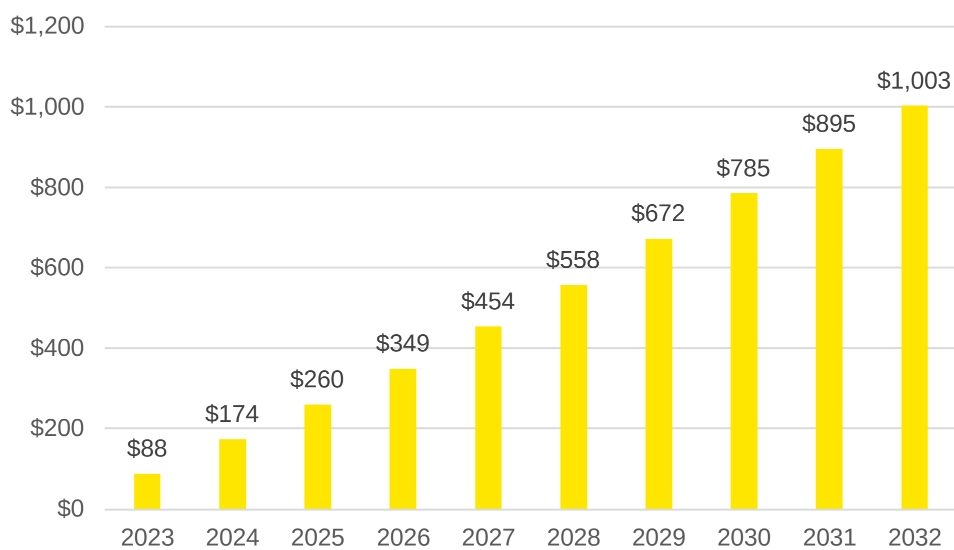
Table 8. Examples of public sector jobs supported through Duke Energy's property taxes associated with clean energy transition capital expenditures (2023-2032)
Millions of 2022 dollars

	Duke Energy	*Public sector jobs supported* Teachers or	Police officers or	Fire fighters
Duke Energy cumulative property taxes (10-year total)	$5.2 billion			
Average annual property taxes	$524 million			
Average public sector salary*		$54,500	$57,000	$44,200
Number of public sector jobs supported annually due to Duke Energy property taxes		**9,600**	**9,200**	**11,880**

Note: *Average salary is weighted based on regional distribution of expected property taxes being contributed by Duke Energy due to clean energy transition capital expenditures. Average wages for teachers derived from National Center for Education Statistics (NCES),2020-2021. Wages for police officers and fire fighters derived from BLS Quarterly Census on Employment and Wages, 2021Q4. Figures may not sum due to rounding.
Source: EY analysis based on data provided by Duke Energy, NCES, and the Bureau of Economic Analysis.

As Duke Energy invests in clean energy generation and grid modernization over the next 10 years, Duke will pay associated property taxes on real and personal property. It is estimated that by 2032, more than $1 billion in local property taxes will paid by Duke Energy annually. The projected annual growth in property taxes is charted in Figure 4 below.

Figure 4. Duke Energy estimated property tax contributions from clean energy transition capital expenditures, (2023-2032)
Millions of 2022 dollars



Source: EY analysis based on data provided by Duke Energy

By the end of the investment period, Duke Energy's clean energy transition capital expenditures are projected to contribute $1 billion annually in local property tax. Table 9 provides an example of how many public sector jobs could be supported by $1.0 billion in annual Duke Energy property taxes.

Table 9. Example of annual number of public sector jobs supported by Duke Energy's associated property taxes from clean energy investments (after 2032)

		Public sector jobs supported		
	Duke Energy	**Teachers or**	**Police officers or**	**Fire officers**
Duke Energy annual property taxes (after 2032)	$1.0 billion			
Average public sector salary*		$54,500	$57,000	$44,200
Number of public sector jobs supported annually due to Duke Energy property taxes		**18,390**	**17,620**	**22,740**

Note: *Average salary is weighted based on regional distribution of expected property taxes being contributed by Duke Energy due to clean energy transition capital expenditures. Average wages for teachers derived from National Center for Education Statistics (NCES),2020-2021. Wages for police officers and fire fighters derived from BLS Quarterly Census on Employment and Wages, 2021Q4. Figures may not sum due to rounding.
Source: EY analysis based on data provided by Duke Energy, US Census Bureau, and the Bureau of Economic Analysis.

4. Appendix

4.1 IMPLAN Input-output model

The economic contribution analysis of Duke Energy's clean energy transition capital expenditures was estimated using detailed input-output models. The economic input-output model identifies the complex flows from producers to intermediate and final consumers within a region. The model uses data describing purchases of commodities and services by industries, compensation paid to employees, and total value added.

This analysis includes direct, indirect and induced economic effects. Direct effects are production changes associated with the immediate effects or final demand changes. Indirect effects are production changes in backward-linked industries caused by the changing input needs of directly affected industries (for example, additional purchases to produce additional output). Induced effects are the changes in regional household spending patterns caused by changes in household income generated from the direct and indirect effects and are included in the estimated impacts presented in this study.

Purchases for final use (final demand) drive the model. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services (indirect purchases) continues until leakage from the region (imports and value added) stops the cycle. These indirect and induced effects (the effects of household spending) can be mathematically derived. The resulting sets of multipliers describe the change of output for each, and every regional industry caused by a one dollar change in final demand for any given industry.

The following IMPLAN industries were used in the US analysis:

41	Electric power generation - Nuclear
52	Newly constructed power and communication structures
216	Iron, steel pipe and tube manufacturing from purchased steel
218	Steel wire drawing
236	Fabricated structural metal manufacturing
263	Mining machinery and manufacturing equipment
281	Turbine and turbine generator set units
297	Scales, balances, and miscellaneous general purpose machinery manufacturing
307	Semiconductors and related devices
316	Electricity and signal testing instruments manufacturing
329	Power, distribution, and specialty transformer manufacturing
333	Storage battery manufacturing
339	All other miscellaneous electrical equipment and components
404	Retail - Electronics and appliance stores
457	Architectural, engineering, and related services
479	Waste management and remediation services
5001	Employee compensation change

4.2 Economic and tax contribution study limitations

The economic and tax contributions are estimates based on capital expenditure data provided by Duke Energy management and have not been independently verified by EY. Duke Energy is planning to spend between $143 billion and $151 billion over the next decade. The analysis presented in this report uses a midpoint of $145 billion which will be spent in grid modernization ($75 billion), regulated zero-carbon generation from solar, wind and other sources ($40 billion), natural gas LDC ($10 billion) and generation ($10 billion), and other expenses ($10 billion). As Duke Energy focuses investment in clean energy projects, investment in conventional energy sources is likely to decline. This report estimates only the positive activity associated with the construction and maintenance of new renewable power generation and grid modernization and does not reflect negative economic activity that results from declines in other areas by Duke Energy. This report also does not capture the year-by-year "incremental" or "net new" economic impact above current (2022) capital expenditure levels. Table ES-3 compares the average annual supported level of economic activity during 2023-2032 to the 2022 baseline year to provide an indication over the 10-year period of what the incremental impact could likely be.

Direct jobs are related to the construction and future maintenance of energy generation and distribution. The analysis does not consider whether required labor is currently employed by Duke Energy, are current contractors or new employees. Employment results presented are estimates of the labor required to complete clean energy projects. Direct, indirect and induced jobs are reported based on work location (where the job is located).

Indirect economic impacts were estimated based on relationships in the IMPLAN input-output model, which describe the mix of locally supplied goods and services, by history, based on historical purchasing relationships. The IMPLAN industry models were chosen to most closely resemble the mix of activities related to the planned capital expenditures.

The economic impacts presented in this report quantify the economic activity supported by Duke Energy's capital expenditures. In some cases, the indirect and induced jobs may not be net new to the states in which the investments are occurring but are temporarily supported by Duke Energy's expenditures. Similarly, the analysis does not measure the potential impacts of jobs lost from the transition to clean energy.

New property taxes due to the capital investments were estimated using the effective tax rates in each state that were calculated based on Duke Energy property costs and property taxes paid as of December 31, 2020. The historical relationship between taxes and labor income in each state was used to estimate the indirect and induced taxes generated through the capital expenditures.