

**South Dakota
Electric Cooperatives' Contribution
To the State's Economy**

Sponsored
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South Dakota Rural Electric Association
and
National Rural Electric Cooperative Association

Contributors
NRECA Market Research Services
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National Rural Utilities Cooperative Finance Corporation

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About South Dakota's Electric Cooperatives

South Dakota's member-owned and controlled electric cooperatives are incorporated under South Dakota law as non profit cooperative business corporations with the basic responsibility of delivering electricity and other vital services.

As member-owned entities, the state's electric cooperatives are governed by boards of directors who are elected from each cooperative's membership. Because of this relationship of being both a director of the cooperative business and a member-owner who uses the services provided by the cooperative, directors have a vested interest in ensuring that their locally owned business is responsive to the cooperative membership and succeeds in meeting its business responsibilities. More than 270 men and women in the state serve as directors for South Dakota's electric cooperatives.

South Dakota's electric cooperatives – like other cooperatives in the country – adhere to the seven cooperative principles of voluntary and open membership; democratic member control; members' economic participation; autonomy and independence; education, training and information; cooperation among cooperatives; and concern for community. These principles comprise the creed by which cooperative business decisions are made.

As separate, independent businesses, these 31 South Dakota electric cooperatives have joined together to create a statewide association to be their voice in legislative and other matters. This organization is the South Dakota Rural Electric Association and is headquartered in Pierre, S.D. Formed in 1942, SDREA is devoted to unifying, promoting and protecting the interests of member electric cooperatives in South Dakota by providing leadership, safety, employee and director training, communication, legislative representation and other member services.

South Dakota's electric cooperatives have also created alliances – in the form of generation and transmission cooperatives (G&Ts) – to purchase and deliver wholesale electric power and provide other necessary, related services. South Dakota's G&Ts are East River Electric Power Cooperative, Madison, and Rushmore Electric Power Cooperative, Rapid City.

Electric cooperatives in eastern South Dakota comprise the majority of East River Electric Power Cooperative. East River supplies wholesale electricity to 22 member systems in South Dakota and western Minnesota, which in turn serve more than 80,000 homes and businesses. The 36,000-square mile service area covers 41 counties in eastern South Dakota and nine counties in western Minnesota. The 19 retail electric distribution cooperatives serving members in South Dakota and which own East River are:

Bon Homme Yankton Electric Association, Tabor
Central Electric Cooperative, Mitchell
Charles Mix Electric Association, Lake Andes
Clay-Union Electric Corporation, Vermillion
Codington-Clark Electric Cooperative, Watertown
Dakota Energy Cooperative, Huron
Douglas Electric Cooperative, Armour
FEM Electric Association, Ipswich

H-D Electric Cooperative, Clear Lake
Kingsbury Electric Cooperative, DeSmet
Lake Region Electric Association, Webster
McCook Electric Cooperative, Salem
Northern Electric Cooperative, Bath
Oahe Electric Cooperative, Blunt
Sioux Valley Energy, Colman
Southeastern Electric Cooperative, Marion
Traverse Electric Cooperative, Wheaton, Minn.
Union County Electric Cooperative, Elk Point
Whetstone Valley Electric Cooperative, Milbank

Rushmore Electric Power Cooperative is owned by eight member distribution cooperatives in north central and western South Dakota. Rushmore Electric territory spans 21 counties in South Dakota and one county in Nebraska. The eight cooperatives that comprise Rushmore Electric are:

Black Hills Electric Cooperative, Custer
Butte Electric Cooperative, Newell
Cam Wal Electric Cooperative, Selby
Cherry-Todd Electric Cooperative, Mission
Lacreek Electric Cooperative, Martin
Moreau-Grand Electric Cooperative, Timber Lake
West Central Electric Cooperative, Murdo
West River Electric Association, Wall

Two retail electric distribution cooperatives – Grand Electric Cooperative, Bison, and Rosebud Electric Cooperative, Gregory – are not affiliated with either Rushmore Electric or East River Electric.

All of South Dakota's electric cooperatives either through East River or Rushmore or via direct contracts purchase bulk wholesale power from the hydroelectric resources of the Missouri River (marketed by the Western Area Power Administration) and supplement these resources with primarily coal-based electric power produced by Basin Electric Power Cooperative, Bismarck, N.D. Basin Electric is owned by South Dakota's electric cooperatives and cooperatives in eight other states: Colorado, Iowa, Minnesota, Montana, Nebraska, New Mexico, North Dakota and Wyoming. Basin's total generating capacity is 2,459 MW. Basin is also a member of SDREA.

The state's electric cooperatives provide electricity to more than 90 percent of South Dakota's geographic area and directly serve about 90,000 homes, farms and businesses in the state, averaging 2.06 consumers per mile of line. Nationally, electric cooperatives serve an average of 6.6 consumers per mile of line while national and state investor-owned utilities serve about 30 consumers per mile of line. Electric cooperatives are the only utility in the state that serves customers in each of the state's 66 counties. South Dakota's electric cooperatives maintain more than 63,600 miles of energized power lines in the state – enough to circle the earth 2.5 times.

Collectively, South Dakota's electric cooperatives have invested over \$540 million in infrastructure. The cost of this infrastructure, combined with the low consumer per mile density, results in an average of \$3,973 investment in electric plant per customer for cooperatives. Investor-owned utilities in South Dakota have an investment cost that is nearly half of that amount, averaging an investment of \$2,094 per customer.

Summary

South Dakota electric cooperatives and their employees make a significant contribution to the economy of the state. Collectively, they contributed in the following areas:

Economic Development

- Generated more than 800 new jobs and retained over 1,640 existing jobs through sponsorship of revolving loan funds during 1997-2001.
- Invested more than \$10.8 million in business and economic development activities during 1997-2001.
- Provided nearly \$15 million in economic and community development loans to 88 different organizations during 1997-2001.

Community Support

- Donated more than \$1.2 million to civic and community development activities during 1997-2001.
- In 2001, electric cooperative employees contributed more than 52,000 hours on volunteer projects that equates to more than \$1 million.
- In 2001 alone, electric cooperatives purchased more than \$244 million in goods and services.

Taxes and Employment

- Paid in excess of \$35.5 million in taxes during 1997-2001.
- Employed 955 persons, making them collectively the 24th largest private sector employer in the state.

Consumer Benefits

- Returned almost \$20 million to cooperative member-consumers for energy efficiency programs during 1997-2001.
- Refunded almost \$30 million in capital credits to member-consumers during 1997-2001.

Electric Cooperatives and Their Communities

Electric cooperatives care about and serve as catalysts for economic development and social benefit in their communities. The heart of the matter for electric cooperatives – the *7th Cooperative Principle*, Concern for Community – pledges that “cooperatives work for the sustainable development of their communities.” For Touchstone Energy® cooperatives, the *4th Touchstone Energy Value* confirms their “Commitment to Community.” These guiding tenants reaffirm the difference of the cooperative business model.

The Cooperative Principles have been around for a long time, but Touchstone Energy is relatively new on the electric cooperative horizon. Since 1998, Touchstone Energy has been communicating the distinctiveness of cooperatives to residential and commercial customers across the country as well as in South Dakota. As the national brand of electric cooperatives, Touchstone Energy provides the resources of a national network that help cooperatives take advantage of economies of scale and enhance their unique relationships with their local consumer-members.

The collective numbers of Touchstone Energy cooperatives are impressive. More than 600 cooperatives in 44 states provide energy solutions to more than 17 million customers. Thirty South Dakota electric cooperatives are part of Touchstone Energy.

Touchstone Energy reinforces the dedication that electric cooperatives have to serving consumer-members with integrity, accountability, innovation and commitment to community – which are the four Touchstone Energy Values.

As to commitment to community, electric cooperatives demonstrate the power of human connections through a variety of community and economic development activities. That commitment is pervasive throughout the South Dakota electric cooperative family. South Dakota electric cooperatives are aware of their contribution to employment, as they are among the top 25 employers in the state (excluding state government).

South Dakota electric cooperatives have commissioned this study to define how their community and economic development initiatives are contributing to the state. This study addresses what electric cooperatives contribute to jobs, taxes, business development, volunteerism and other necessary ingredients of a healthy community. This study quantifies the many aspects of local involvement and the investments South Dakota electric cooperatives provide in serving as vital community catalysts.

Electric Cooperatives as Businesses and Community Catalysts – The South Dakota Rural Electric Association queried all 31 South Dakota electric cooperatives to determine the collective contributions to the state’s economy. The 29 distribution cooperatives and two generation and transmission cooperatives serving South Dakota completed questionnaires with more than 500 data points that provide information on the cooperatives as businesses and as community catalysts.

Collectively, South Dakota’s electric cooperatives serve 30 percent of the state’s electric consumers.

Electric Cooperative Contributions as Businesses

	2001	1997-2001
Taxes Paid		
Electric Services	\$7,346,683	\$35,132,277
Non Electric Services	+ <u>\$239,042</u>	+ <u>\$458,906</u>
	\$7,585,725	\$35,591,183

South Dakota’s electric cooperatives pay significant amounts in taxes. In 2001, they paid more than \$7.5 million in taxes for electric and non electric services (gross receipts, property and other business taxes) and more than \$35.5 million from 1997 to 2001.

	2001	1997-2001
Capital Credits	\$8,558,215	\$28,893,696

Since 1997, South Dakota electric cooperatives contributed almost \$30 million to the state economy by retiring capital credits. Capital credits are the earnings of a cooperative (gross income less all costs) that are allocated to consumer-members in proportion to the amount paid for electricity during the year. Specifically, electric cooperatives returned \$8,558,215 in capital credits to the consumer-members they served for the year 2001 and \$28,893,696 for 1997-2001.

Highlights of the RUPRI Economic Analysis of Cooperatives as Businesses

As part of a more thorough analysis of the economic contribution of the 31 South Dakota electric cooperatives as businesses, the National Rural Electric Cooperative Association (NRECA) contracted with the Rural Policy Research Institute (RUPRI). RUPRI used the IMPLAN model – that is, Impact Analysis for PLANing, – to quantify the direct and indirect contributions of electric cooperatives in 2001 on the South Dakota economy.

Selected because it understands rural policies and communicates grassroots concerns, RUPRI sought to determine how many jobs electric cooperatives created, how much income they generated and what were the total economic contributions they made to South Dakota. The complete RUPRI survey, including methodology and reference to authors, is included in the back of this study.

Key Numbers – In summary, the electric cooperatives directly or indirectly created 2,053 jobs in South Dakota, which accounts for 0.4 percent of employment in the state. The direct contribution (economic output) of electric cooperatives in 2001 was \$172.4 million, of which \$98.6 million represented the cost of purchased power. While performing their business, paying wages, salaries, rebates, charitable donations as well as returning capital credits, the cooperatives indirectly contributed \$72.1 million in economic output to the state's economy for a total of over \$244 million in economic activity. This total economic activity included an estimated \$71 million in personal income in the state, representing 0.3 percent of total personal income.

Model Description – In 2001, electric cooperatives received revenue from their consumer-members for electric and non-electric services. That revenue was spent – contributed to the economy - in various ways. Electric cooperative employees spent part of their salaries and member-owners spent part of their retired capital credits on the purchase of goods and services. These purchases created additional jobs, income and expenditures within more than 10 affected industrial sectors. So, there is a multiplier effect with regard to jobs, income and goods and services. With regard to returned capital credits, RUPRI's modeling assumes two-thirds remain in state.

Jobs – South Dakota electric cooperatives employed 832 full-time and 123 part-time employees. Electric cooperative employees spending salaries and wages as well as consumer-members spending retired capital credits resulted in an additional 481 jobs in the economy. Electric cooperatives purchased goods and services resulting in an additional 617 jobs for a total of 2,053 jobs. This resulted in a multiplier of 2.1, meaning that for every job created in the electric cooperatives, 1.1 jobs were created or supported in more than 10 industry sectors.

Income – South Dakota electric cooperatives contributed \$46 million through wages, salaries, rebates, charitable donations and returned capital credits. These resulted in an additional \$11.2 million in more than 10 industrial sectors. Finally, through the electric cooperative purchase of goods and services, another \$13.8 million was generated in income for a total of \$71 million. This equates to an income multiplier of 1.5. The \$71 million total equals 0.3 percent of the personal income in South Dakota.

Goods and Services – Electric cooperatives in South Dakota had total expenditures of \$172.4 million. Electric cooperative employees used wages and salaries and consumer-members used retired capital credits to purchase goods and services worth \$31.3 million. In addition, electric cooperative expenditures of \$27.6 million within the state resulted in an additional \$40.8 million in purchase of goods and services by the more than 10 industrial sectors. The purchase of goods and services by the electric cooperatives, their employees and the retired capital credits of consumer-members in the more than 10 industrial sectors resulted in \$244.5 million being contributed to the South Dakota economy.

Total Contributions

Jobs	Goods and Services	Income
832 full-time	\$172.4 M	\$46.0 M
123 part-time	\$31.3 M	\$11.2 M
481 indirect	<u>\$40.8 M</u>	<u>\$13.8 M</u>
<u>617 multiplier effect</u>		
2053	\$244.5 M	\$71 M

Electric Cooperatives' Contributions as Community Catalysts

Community & Economic Development	2001	1997 – 2001
Business & Economic Development	\$3,829,696	\$10,850,30
Revolving Loan Funds	\$2,410,675	\$14,944,655
Civic & Community Development	\$112,395	\$418,975
Education	\$548,595	\$1,845,670
Housing	\$229,343	\$1,014,288
Energy Efficiency Programs	\$5,372,187	\$19,946,908
Charitable Contributions	\$229,871	809,449
Volunteer	\$1,152,969	n/a
Other	<u>\$190,872</u>	<u>\$2,425,582</u>
Total	\$14,076,603	\$52,255,836

Community and Economic Development – South Dakota electric cooperatives make major investments in community and economic development each year. They provide financing for such activities as industrial parks, healthcare and assisted living, value-added agriculture, construction of spec buildings and other projects. Capital credits, the earnings of an electric cooperative (gross income less all costs) that are allocated to consumer-members in proportion to the amount paid for the electricity they purchased during the year, are normally returned to consumer-members, hence the term, retired capital credits.

South Dakota electric cooperatives invested \$3,829,696 in 2001 and \$10,850,309 from 1997-2001 in business, commercial and economic development.

Electric cooperatives use these earnings as working capital to maintain safe and reliable electric service and then pay back their consumer-members in later years. In South Dakota, however, some electric cooperatives are allowing consumer-members the option to use their accumulated capital credits as collateral to secure loans that benefit the local farm economy. In other words, consumer-members have the option of borrowing funds from their electric cooperative to invest in value-added projects that increase farm income and strengthen the economy of their local communities.

Beginning in 2000, East River Electric Power Cooperative (G&T), in partnership with a number of the state's distribution cooperatives, introduced a program enabling consumer-members to make equity investments in new or expanding value-added, producer-owned agricultural projects. The loans are made and managed jointly by East River and the consumer-members' local distribution cooperative and are repaid by future capital credit retirements to cooperative members-owners.

Revolving Loan Funds – Approximately 60 percent of South Dakota electric cooperatives operate a non profit revolving loan fund (RLF) to finance community and economic development projects. These RLFs are funded through a combination of the USDA Rural Economic Development Loan and Grant (REDL&G) program, other federal funds, private resources and cooperative revenues. In 2001, electric cooperatives arranged loans of \$2,410,675 to start or expand community businesses and/or services. From 1997-2001, electric cooperatives provided \$14,944,655 to finance 90 projects for 88 different development organizations. This support generated more than 800 new jobs over the five-year period and retained 1,641 existing jobs.

Civic and Community Development – South Dakota electric cooperatives and their more than 900 employees contributed substantial amounts of individual time and cooperative support during work time to the communities they serve. They contributed \$112,395 in civic and community development efforts in 2001 and \$418,975 for the years 1997-2001. The broad range of activities includes fire, police and ambulance services; senior assisted living; community recreation centers; Main Street renewal; and job training.

Education – In 2001, electric cooperatives invested \$548,595 in education in the local communities and \$1,845,670 from 1997 to 2001. Major areas of emphasis included educational tours (Youth Tours, power plant and cooperative tours) that amounted to \$168,647 in 2001 and \$729,609 from 1997 to 2001. In addition, electric cooperatives funded scholarships that amounted to \$52,885 in 2001 and \$224,512 from 1997 to 2001; and electric safety awareness classes that amounted to \$38,940 in 2001 and \$193,380 from 1997 to 2001. In 2001, South Dakota electric cooperatives contributed approximately \$32,000 to K-12 schools as well as area colleges and universities for distance learning, foundations and other educational programs.

Housing – In 2001, electric cooperatives invested more than \$229,343 in new housing and housing rehabilitation, of which 87 percent was in the form of materials and employee time. From 1997 to 2001, electric cooperatives invested more than \$1 million with 85 percent being in-kind investment. Activities focused on wiring assistance and advice (\$152,709 in 2001 and \$722,449 from 1997 - 2001), and weatherization and conservation consulting (\$65,694 in 2001 and \$256,435 from 1997 - 2001).

Consumer Energy Efficiency Programs – Electric cooperatives invest funds in rebates to consumer-members for purchases of energy efficient equipment. In 2001, electric cooperatives paid \$2,621,213 to consumer-members in rebates and from 1997 to 2001, paid \$9,646,934. In addition to rebates, electric cooperatives made low-interest loans to consumer-members for insulation, windows and HVAC (Heating, Ventilating and Air Conditioning) equipment of \$2,472,196 in 2001 and a total of \$9,477,243 from 1997 to 2001.

Charitable Contributions – South Dakota electric cooperatives have made charitable contributions of \$229,871 in 2001 and \$809,449 from 1997 - 2001. Some electric cooperatives promote Operation Round-Up®, which rounds up monthly electric bills to the next dollar, with the additional revenues that are collected made available for charitable and community purposes.

Electric cooperatives support local police, fire and ambulance services. In 2001, South Dakota electric cooperatives contributed almost \$58,000 in cash and in-kind donations for public safety (approximately three-fourths of this was employee volunteer time during work hours).

Volunteer Time – Electric cooperative personnel are active in their local communities with employees donating 52,018 hours in 2001 to their communities during non work hours. South Dakota electric cooperatives calculated the average hourly rate for volunteer hours, then added a percent of that amount for fringe benefits and then multiplied this by the total number of hours (52,018) for a total dollar investment of \$1,152,969.

To put this in perspective, the average electric cooperative employee volunteers 55 hours a year – more than three times the number of hours recognized as “the national standard for employee volunteer program excellence” by VeraWorks.

(Source: The Points of Light Foundation referred NRECA to VeraWorks, www.veraworks.com)

Other – South Dakota electric cooperatives frequently provide volunteer assistance to neighboring cooperatives and electric utilities in times of emergency and also donate labor and surplus equipment to help electrify developing countries.

**The Economic Contribution of Electric Cooperatives
to the South Dakota Economy**

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I. Preface

All businesses impact a local economy through their employment and payroll. But the total economic activity of a business stretches beyond these direct effects. Linkages exist between one firm or industry and the rest of the economy. An industry may buy a portion of its material inputs and business services from other local businesses. Likewise, employees spend a portion of their earnings on goods and services within the local economy. These additional activities, or linkages, generate additional economic activity in the local area.

The National Rural Electric Cooperative Association recently commissioned a study from the Rural Policy Research Institute (RUPRI) to assess the total economic contribution of the 31 electric cooperatives located in South Dakota to the state's economy. This report summarizes the results of that study. Principal authors of this study were Dr. Thomas G. Johnson, Frank Miller Professor of Agricultural Economics and Professor, Harry S Truman School of Public Affairs, University of Missouri - Columbia, and Kathy Miller, RUPRI Program Director. The study methodology is commonly utilized by RUPRI's Community Policy Analysis Network, a nationwide network of regional economists committed to assessing the spatial and community implications of public policy choices.

The authors appreciate the very special efforts of Ms. Jane Marden, Director of Community and Economic Development, National Rural Electric Cooperative Association, and Ms. Audry Ricketts, General Manager, South Dakota Rural Electric Association, in assisting with compilation of the proprietary data utilized in this analysis. We also wish to thank the staff of these cooperatives for their assistance in reporting the data that was essential to this effort.



Charles W. Fluharty

RUPRI Director

II. Executive Summary

This report assesses the total economic contribution of South Dakota's 31 electric cooperatives to that state's economy. These cooperatives employ 832 full-time and 123 part-time employees. The business linkages resulting from this electric cooperative activity generate an additional 1,098 jobs statewide. In total, electric cooperatives support 2,053 jobs in South Dakota, which represents .4 percent of total employment in the state. The employment multiplier for the electric cooperatives is 2.1, meaning that for every job created in the electric cooperatives, 1.1 jobs are supported elsewhere in the economy.

The linkages that electric cooperatives have generated in the state's economy created an additional \$13.8 million of income statewide and the effects of spending of wages, salaries, rebates and capital credits generates an additional \$11.2 million in income. Directly, the electric cooperatives provide \$46 million in wages, salaries, rebates and capital credit refunds to South Dakota households. In total, over \$71 million in income is supported by the electric cooperative industry – an income multiplier of 1.5. This sector accounts for .3 percent of total personal income in South Dakota.

The activities of the electric cooperatives also generate significant additional economic activity in South Dakota. The linkages that cooperatives have generate an additional \$40.8 million in output and the impact of employee spending generates an additional \$31.3 million in output. In total, the \$172 million in expenditures from the 31 electric cooperatives located in South Dakota generates an additional \$72 million in economic output in the state, a multiplier of 1.4.

III. Methodology

The primary source of data for this analysis was a survey designed by the Rural Policy Research Institute. Each cooperative completed this detailed survey, which listed employment, payroll and operating expenditures in 2001. However, because not all cooperatives reported their capital credit refunds, rebates and charitable donations on this survey instrument, that information was added from proprietary data collected in recent surveys by the National Rural Electric Cooperative Association and the South Dakota Rural Electric Association.

Because those instruments did not specify the amount of capital credit refunds, rebates and charitable donations retained within South Dakota, these percentages were estimated by RUPRI analysts, based upon observations collected in the RUPRI survey. Rebates and charitable donations were assumed to be fully retained within South Dakota. Two-thirds of capital credit refunds were assumed to be retained in South Dakota. The remaining third is assumed to go to former cooperative members who have retired out of state or whose estate beneficiaries reside out of state. Because of these assumptions, it is possible that the level of capital credit refunds retained within South Dakota could be higher or lower in this reporting year. Were they higher, this analysis would slightly underestimate their impacts.

The total spending patterns of individual cooperatives were summed across the state, to create a single, statewide picture of electric cooperative spending. The aggregated results of the survey are shown in Table 1, below.

It is also important to recognize that the assumptions used in this analysis and the IMPLAN methodology precludes consideration of several other significant contributions that the electric cooperatives make within South Dakota. The cooperative community has had a long and laudable history of significant community and volunteer service within the state. This study does not attempt to quantify any of these contributions that accrue to the benefit of South Dakota’s communities as a result of the voluntary service of cooperative employees or the organizational support for these activities provided at a corporate level by the electric cooperative industry. This support is far from insignificant, but is not considered in this analysis.

Table 1. The Direct Impacts of South Dakota’s Electric Cooperatives: Results of Survey

Total Expenditures Reported on Surveys	\$172,381,525.10
Electricity for Distribution	\$98,691,553.92
Wages, Salaries, Rebates, Charitable Donations, Capital Credit Refunds	\$46,059,977.89
Other Expenditures	\$27,629,993.29
Total Full Time Employment	832
Total Part Time Employment	123

A total of \$172.4 million in expenditures were reported on the 31 surveys, \$98 million of which was the purchase of electricity for distribution and \$46 million was reported as salaries, wages, rebates and capital credit refunds to households. The analysis assumed that the electricity purchased was either produced by other cooperatives in the survey or produced out of state. The economic impact of the household income and the \$27.6 million in other expenses were analyzed using the IMPLAN methodology. IMPLAN (IMpact analysis for PLANning) is a widely recognized and utilized data and software program containing comprehensive national data, used to estimate regional economic impacts. See Appendix C for a more thorough description of the IMPLAN methodology and assumptions, as well as definitions for the terms used in this report.

IV. The Economic Contribution of South Dakota’s Electric Cooperatives

The 31 electric cooperatives operating in the state of South Dakota directly employ 832 full-time and 123 part-time employees, with total annual payroll of over \$37 million and an additional \$9 million in rebates, capital credit refunds and charitable donations contribute to South Dakota household income. Households spend a portion of this income on goods and services within South Dakota.

These purchases generate additional economic activity and employment in the economy. In addition, the electric cooperatives purchase a portion of their material inputs and business services in the local economy, again generating additional economic activity. These purchases of goods and services are referred to as indirect impacts. Additional household income is generated as a result of this economic activity and local spending of that income is referred to as induced effects.

These economic impacts are reported in two categories. First are the backward linkages or the purchase of inputs by electric cooperatives. Examples of the types of goods and services purchased by the electric cooperatives include power transmission equipment, office supplies, vehicles, accounting and legal services, etc. The second set of impacts results from local spending income by electric cooperative employees and customers received as wages, salaries rebates, charitable contributions and capital credit refunds. These include purchases of local goods and services such as groceries, fuel and childcare services, etc.

Employment Impacts

Table 2 reflects the total employment impact generated by the activities of the 31 electric cooperatives in South Dakota. Column A shows the impacts of the purchases of goods and services by the cooperatives and Column B details the impacts generated by the spending of additional household income.

The business linkages that the electric cooperatives have with other sectors in the economy of South Dakota generate 617 jobs statewide. The majority of these jobs are in service industries (legal services, accounting, engineering, personnel and business service, etc.). The spending of wages, salaries, rebates and capital credit refunds generates 481 jobs statewide. The majority of these jobs are in the trade (restaurants, grocery and other retail stores, etc.) and the services (health care, education, hotels, etc.) sectors. As a result of the economic activity of electric cooperatives in South Dakota, 1,098 additional jobs are generated. In addition to these effects, 955 employees work directly at the electric cooperatives.

In total, electric cooperatives support 2,053 jobs in the South Dakota economy (direct employment plus indirect and induced effects). This represents 0.4 percent of total employment in South Dakota. The employment multiplier for the electric cooperative sector is 2.1. That is, for every one job created at the electric cooperatives, 1.1 jobs are supported elsewhere in the economy.

Table 2. Employment Impacts of the Electric Cooperatives in South Dakota

Industry Sector	Column A Indirect and Induced Effects of Linkages	Column B Indirect and Induced Effects of Household Income	Column C Total Indirect and Induced Effects
Agriculture	2	5	7
Mining	2	0	2
Construction	53	8	61
Manufacturing	62	11	73
Transportation and Public Utilities	27	16	43
Retail and Wholesale Trade	78	195	273
Finance, Insurance & Real Estate	30	39	69
Services	341	196	537
Government	20	5	25
Other	2	6	8
Total	617	481	1,098

Income Impacts

Table 3 shows the income impacts associated with the activities of the 31 electric cooperatives in South Dakota.

The linkages that cooperatives have with other sectors of the economy generate an additional \$13.8 million in income statewide. A large portion of this income is generated in the services sector (business services, legal services, accounting, engineering, etc.) and the manufacturing and construction sectors. The effects of the spending of income from wages, salaries, rebates and capital credit refunds generate an additional \$11.2 million in income statewide, primarily in the trade and services sectors. Directly, the electric cooperatives provide about \$46 million in wages, salaries, rebates and capital credit refunds to households (See Table 1). In total, over \$71 million in income is supported by the electric cooperative industry – an income multiplier of 1.5. The electric cooperative sector accounts for 0.3 percent of total personal income in South Dakota.

Table 3. The Income Impacts of the Electric Cooperatives in South Dakota

Industry Sector	Column A Indirect and Induced Effects of Linkages	Column B Indirect and Induced Effects of Household Income	Column C Total Indirect and Induced Effects
Agriculture	\$44,351	\$143,615	\$187,966
Mining	\$31,524	\$6,227	\$37,751
Construction	\$1,803,108	\$269,107	\$2,072,215
Manufacturing	\$2,133,542	\$352,525	\$2,486,067
Transportation and Public Utilities	\$1,367,803	\$683,914	\$2,051,717
Retail and Wholesale Trade	\$1,619,352	\$3,310,458	\$4,929,810
Finance, Insurance & Real Estate	\$936,608	\$1,065,839	\$2,002,447
Services	\$5,271,309	\$5,076,157	\$10,347,466
Government	\$585,103	\$207,055	\$792,158
Other	\$12,006	\$42,281	\$54,287
Total	\$13,804,706	\$11,157,178	\$24,961,884

Output Impacts

Table 4 shows the total output impacts associated with the activities of the 31 electric cooperatives in South Dakota. Column A reports the indirect and induced effects resulting from the cooperatives' expenditures of \$27.6 million, representing expenditures less the salaries, wages, rebates and capital credit refunds and the electricity purchased for distribution (See Table 1). Column B reports the indirect and induced effects of the wages and salaries paid to employees and rebates and capital credit refunds to South Dakota households.

The activities of the electric cooperatives generate significant additional activity in the South Dakota economy. The linkages that cooperatives have with other sectors of the economy generate an additional \$40.8 million in output, a large portion of which is in the manufacturing and services sectors. The impact of employee spending generates an additional \$31.3 million in output, a majority of which is in the services, trade and finance sectors. In total, the \$172.4 million in expenditures from the 31 electric cooperatives generate \$72 million in additional economic output in the state, a multiplier of 1.4.

Table 4. The Output Impacts of the Electric Cooperatives in South Dakota

Industry Sector	Column A Indirect and Induced Effects of Linkages	Column B Indirect and Induced Effects of Household Income	Column C Total Indirect and Induced Effects
Agriculture	\$161,206	\$563,910	\$725,116
Mining	\$279,054	\$54,596	\$333,650
Construction	\$3,862,091	\$526,659	\$4,388,750
Manufacturing	\$10,430,099	\$2,115,999	\$12,546,098
Transportation and Public Utilities	\$6,618,269	\$2,718,424	\$9,336,693
Retail and Wholesale Trade	\$3,786,505	\$7,503,305	\$11,289,810
Finance, Insurance & Real Estate	\$4,221,515	\$6,888,869	\$11,110,384
Services	\$10,155,400	\$9,594,811	\$19,750,211
Government	\$1,322,145	\$1,275,499	\$2,597,644
Other	\$12,006	\$42,281	\$54,287
Total	\$40,848,290	\$31,284,353	\$72,132,643

Appendix A Description of IMPLAN Methodology, Assumptions and Definitions

IMPLAN Description (source: *IMPLAN Pro User's Guide, Minnesota IMPLAN Group, Inc., 2nd Edition, June, 2000*)

IMPLAN (IMPact Analysis for PLANning) was originally developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management to assist the Forest Service in land and resource management planning.

The IMPLAN system has been in use since 1979 and has evolved from a main-frame, non interactive application that ran in “batch” mode to a menu-driven microcomputer program that is completely interactive.

There are two components to the IMPLAN system - the software and the database. The software performs the necessary calculations, using the study area data, to create the models. It also provides an interface for the user to change the region's economic description, create impact scenarios and introduce changes to the local model. The databases provide all the information needed to create regional IMPLAN models.

Input-Output analysis is a means of examining relationships within an economy, both between businesses and between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The resulting mathematical formulae allow examination of the effects of a change in one or several economic activities on an entire economy, known as *impact analysis*.

Key Assumptions

The methodology used in the IMPLAN program is based on several assumptions about the economy. First, IMPLAN assumes that the inputs increase proportionately with output. In other words, in order for output to double, all of the inputs used in production must double.

Second, IMPLAN assumes that the availability of inputs (raw materials) is unlimited – so production of a product is only limited by the demand for that product.

Third, IMPLAN assumes that changes in the prices of inputs (raw materials) or new technology do not affect the firm's purchase of that input. In other words, the firm would not switch to a cheaper input if the prices rose.

Definitions and Description of the IMPLAN Model

The multiplier effect refers to the following process: a sector creates jobs which provide income to previously unemployed and underemployed persons, those persons spend much of their income on goods and services bought within the county, this increase in demand for goods and services purchased in the local economy eventually results in the creation of other new jobs in the region (in retail establishments, service industries, suppliers of raw materials to the new company, producers of new products using the new firms output as input, etc.), and the cycle continues with more income being spent, creating increased demand and more new jobs. This effect does eventually end since at each stage some of the newly employed persons' incomes will be used to purchase goods and services outside the region. This loss is known as leakage. Once the value of all new income has leaked out of the county, there is no more driving force behind the multiplier effect and the cycle ends. The sum of all activity that has occurred during the cycle is the output multiplier.

The multiplier is calculated by distinguishing direct effects from indirect effects and total effects. The direct effects are those associated with the sector itself – its output, employment and income. The indirect effects are all those effects that occur to other firms in the region. The total effects are the sum of the direct and indirect effects. Thus the multiplier is the total effect divided by the direct effect.

Input-output models distinguish between output, income and gross state product. Output, sometimes called economic activity, includes all sales from all firms. This is the most commonly used measure of impact, but is not the best measure because it includes a lot of intermediate products produced in other regions. Gross state product (GSP) is a better measure since it nets out the part of output not produced locally. Income measures the portion of GSP that becomes the gross income of individuals.

Appendix B: Primary Authors

Thomas G. Johnson is Frank Miller Professor of Agricultural Economics, a Professor in the Harry S Truman School of Public Affairs, and Director of the Community Policy Analysis Center at the University of Missouri-Columbia. He served as the founder and original Chair of RUPRI's national Community Policy Analysis Network.

Dr. Johnson's research areas include rural economic development, fiscal and economic impact analysis, local government finance and transportation economics. Dr. Johnson's research includes interdisciplinary projects in the economics of land use, soil conservation, transportation, rural education, bio-energy, local government finance and rural labor markets. Many of his projects are interdisciplinary, involving collaboration with colleagues in natural sciences, engineering, sociology, political science, informatics and others.

Dr. Johnson has served on the Editorial Council of the Southern Journal of Agricultural Economics, the Executive Council of the Southern Regional Science Association, the Advisory Board of America Runs on Local Roads, the Community Development Advisory Committee to the Federal Reserve Bank of Kansas City and numerous state and national committees and task forces. He is past president of the Southern Regional Science Association and former Chair of the Montgomery Regional Economic Development Commission. He has served as consultant to the U.S. Economic Development Administration, the U.S. Department of Agriculture, the National Governors' Association, the Government Finance Officers' Association, the Council of State Governments, the New Jersey Office of State Planning, the Oregon State Legislature, the North Carolina Rural Development Center, the Virginia Association of Counties, the Virginia Department of Agriculture and Consumer Services and the West Virginia and Virginia Departments of Transportation. He has also consulted with the governments of Canada, the Czech Republic, Ireland and Northern Ireland.

Kathleen Miller is the program director at the Rural Policy Research Institute. Her duties include coordinating research and dissemination activities of the various RUPRI panels, projects and centers and providing analytic support for the RUPRI Community Policy Analysis Network and Rural Poverty Research Center. She received a B.S. and M.S. in agricultural economics from Penn State University. Prior to joining RUPRI, she worked for the Penn State University Cooperative Extension Service and the University of Missouri's Community Policy Analysis Center.