THE ECONOMIC AND FISCAL IMPACTS OF EXPANDING THE INTERMOUNTAIN POWER PROJECT

Prepared by

Jan Crispin-Little
Bureau of Economic and Business Research
David Eccles School of Business
University of Utah

August 2003

Table of Contents

Introduction

Executive Summary 1

Section I
Estimating Economic Impacts Using RIMS II 3
Methodology and Assumptions 3
Understanding Economic Impacts 4

Section II
The Economic and Fiscal Impacts of Unit 3
Construction Phase 6
Assumptions 6
Direct Impact on Employment and Earnings 7
Indirect Impact on Employment and Earnings 7
Estimating Fiscal Impacts 8
Fiscal Impacts Derived From Earnings 9
Understanding the Impacts 14
Caveats to the Impacts 15

Section III
The Economic and Fiscal Impacts of Unit 3
Operations Phase 16
Overview 16
Impact of Operations 16
Fiscal Impacts 17
Impact on Utah's Mining Industry 18

Appendix
Methodology Used to Estimate Direct Construction
Employment and Earnings 21

List of Tables

Table 1: Impact on Employment and Earnings Unit 3 - Construction Phase 8

Table 2: Total Economic and Fiscal Impact of Unit 3 Construction Phase 10

Table 3: Calculation of the Economic Impact of Unit 3 Construction 11

Table 4: Impact on Employment and Earnings Unit 3 - Operations 17

Table 5: Total Economic and Fiscal Impact of Unit 3 Operations Phase 18

Table 6: Calculation of the Economic Impact of Unit 3 Operations 19

The Economic and Fiscal Impacts of Expanding the Intermountain Power Project

Introduction

This study was undertaken by the Bureau of Economic and Business Research (BEBR) at the request of the Intermountain Power Agency (IPA). The express purpose of the study is to identify the economic benefits for the state of Utah of constructing and operating a third coal-fired generation unit (Unit 3) at the Intermountain Power Project (IPP) located in Delta, Utah about 100 miles southwest of Salt Lake City.

Unit 3, a 950-MW (gross) generator, will complement the generating activities of Units 1 and 2 at the IPP facility. The estimated cost of constructing Unit 3 is $1.75 billion (not including interest during construction). A significant portion of the labor and materials used in the construction will be purchased from Utah-based suppliers and vendors. Annual operating costs are expected to be about $131.0 million, most of which ($111.0 million) will be spent locally for the purchase of labor and coal.

The economic impacts arising from the construction and operation of Unit 3 will be significant. Millions of dollars worth of materials, supplies and equipment will be used during construction. These purchases will sustain and create several thousand jobs in Utah over a period of four years. The operation of Unit 3 will require a permanent work force of an additional 75 people.

The impact of constructing and operating Unit 3 can be quantified using a standard input-output model developed by the U.S. Department of Commerce, Bureau of Economic Analysis known as RIMS II. The impact estimates produced with RIMS II show the levels of indirect and induced employment and earnings that result from direct purchases of labor, goods and services from individuals and businesses located in the state of Utah.

In addition to the employment and earnings effects, the construction and operation of Unit 3 will generate tax revenue for state and local government treasuries. These tax benefits will be substantial. Most of the materials and equipment purchased for the construction of Unit 3 will be subject to a sale and use tax. The operations will generate revenue from sales and use taxes, a fee-in-lieu tax and a gross receipts tax. Finally, the earnings generated by the construction and operation of Unit 3 will be subject to personal income tax as well as other taxes as earnings are spent in the local economy on items that are subject to a variety of taxes.

As this study shows, the impacts of building and operating Unit 3 are considerable. In the short term, construction activities will provide millions of dollars in tax revenue for state and local treasuries and help support the state's construction sector by providing high-paying jobs for several thousand workers. The long-term impacts of operating Unit 3 include not only millions of dollars in tax revenues, but will be an economic boon to Mallard County and the surrounding area by stimulating economic growth in the region.

The Economic and Fiscal Impacts of Expanding the INTERMOUNTAIN Power Project

Executive Summary

This study provides economic and fiscal impact estimates of expanding the existing capacity of the Intermountain Power Project-specifically constructing and operating a third, coal-fired electrical generation unit known as Unit 3 and modifying onsite switching facilities to provide a tie-in for the new unit.

Under the proposed expansion, Unit 3 will add an additional 950-MW (gross) of generating capability to the facility's existing 1,900-MW (gross) generating capability. The new unit will be a near replica of existing Units 1 and two that were completed in 1987. Unit three will be located adjacent to Unit 2 at the Intermountain Power Project located in Delta, Utah.

The estimated cost of constructing Unit 3 (including switch yard modifications) is $1.75 billion (not including interest during construction). Of this, approximately $427.7 million will be supplied by Utah vendors and Utah workers. In fact, hundreds of workers will be required during the construction phase which is scheduled to proceed over a four-year period with employment peaking at 1,029 in year four.

Construction Phase

Direct, full-time equivalent (FTE) construction employment is estimated by BEBR to be 2,793 and includes both construction craft and support personnel who will work directly at the site. Over the course of the construction phase, direct compensation of Utah workers is estimated to be $230.8 million (wages, salaries and fringe benefits).

The indirect and induced benefits generated by the construction at IPP are measured using a standard regional economic model developed by the U.S. Bureau of the Census, Bureau of Economic Analysis. This model, known as RIMS II tracks the flow of purchases made in the Utah economy and shows how those purchases impact jobs and earnings in the affected sectors.

When the indirect and induced impacts generated by construction activities are accounted for, employment generated during the construction phase will be 10,092. Compensation paid to Utah workers is estimated at $435.8 million.

In addition to the impacts on employment and earnings, the construction of Unit 3 will generate new tax revenue for state and local government treasuries. Taxable purchases of materials and equipment used in the construction will total approximately $368.7 million. Applying a conservative sales and use tax rate of 5.75% provides state and local government agencies with $21.2 million in sales and use tax revenue.

The earnings generated by IPP's construction activities are also subject to a variety of state and local taxes (including personal income, property, sales and other miscellaneous taxes). The tax revenue on total earnings of $435.8 million has been estimated by BEBR to be $47.2 million. When sales and use tax revenue and the tax revenue from earnings are combined, the total benefit to state and local government treasuries is $68.4 million.

Operation Phase

When fully operational, Unit 3 will employ an additional 75 workers with a payroll of $6.4 million annually. When the indirect and induced effects are accounted for, total employment attributable to Unit 3 operation climbs to 1,862 workers with earnings of $73.8 million.

State and local tax revenues generated by Unit 3 operations are estimated to total approximately $17.1 million annually. This includes direct tax payments such as a fee-in-lieu tax of $6.0 million, gross receipts tax of $3.0 million, and sales and use taxes of $130,000. The indirect tax payments derived from earnings are estimated to be $8.0 million annually.

Finally IPP is, and will continue to be, a large purchaser of Utah coal. In 2002, IPP burned more than 5.3 million tons of Utah coal, representing about one-fifth of all coal produced in the state, and supporting 330 jobs in the coal mining sector. The operation of Unit 3 will require an additional 2.6 million tons of coal each year which will support about 165 more coal mining-related jobs. (The jobs generated by purchases of coal are included in the indirect and induced estimates of operations).

In contrast to the construction impacts which occur over a four-year period and cease when the facility becomes fully functioning, the operations impacts will remain essentially unchanged throughout the life of the facility. Therefore, the operations impacts will have a significant impact on the long-term economic viability of the surrounding areas.

Section I
Estimating Economic Impacts Using RIMS II

The economic impact estimates presented in this study utilize a standard tool of regional economic analysis known as the Regional Input-Output Modeling System (RIMS II). Developed by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce, RIMS II is based on an accounting framework called an Input-Output (I-O) table. For each industry, an I-O table shows the distribution of the inputs purchased and the outputs sold. A typical I-O table in RIMS II is derived mainly from two sources: BEA's national I-O table which shows the input and output structure of nearly 500 U.S. industries and the BEA's regional economic accounts which are used to adjust the national I-O table to reflect a region's industrial structure and trading patterns.

In this study, the economic impacts of two separate activities have been estimated - the impacts that result from the construction of Unit 3 at IPP and the ongoing impacts that result from the operation of Unit 3 once it becomes fully operational. Both sets of estimates include the direct, indirect and induced impact on earnings, employment and increased tax revenue that result from direct purchases made in Utah during the construction and operation phases.

The direct impact of the construction phase reflects the direct purchases of labor from Utah workers-specifically, construction craft and support workers located at the construction site. The indirect and induced impacts initiate from purchases made in the local economy for goods and services used in the construction of Unit 3 and occur as Utah suppliers purchase goods and services from yet other Utah suppliers. The induced effects occur when construction craft, support workers and the employees of Utah companies that provide goods and services to the construction efforts spend their earnings on goods and services from other Utah suppliers.

The direct impact of the operations phase is embodied by those workers who will be directly employed at Unit 3. The indirect and induced impacts will initiate from purchases made in the local economy to operate the facility, and occur as Utah suppliers purchase goods and services from other Utah suppliers. The induced effects occur when Unit 3 employees and the employees of Utah companies that provide goods and services to operate Unit 3 spend their earnings for goods and services from other Utah suppliers.

For both the construction and operation phases, the sum of the direct, indirect and induced requirements represents the total economic impact of activities related to the construction and operation of Unit 3. However, the construction phase impacts will cease when the project is completed, whereas the impacts from the operation phase could continue indefinitely.

Methodology and Assumptions

To accurately assess the economic impacts generated from construction and operation of Unit 3, it was necessary to identify purchases that could be made from local suppliers. Purchases relating to the operation of Unit 3 were provided by the Intermountain Power Agency - the owner of the Intermountain Power Project. These estimates were based on the operating costs of Units 1 and 2 which are presently generating electrical power at IPP. In estimating the economic impacts of the operations, BEBR assumed that all revenue from the facility comes from outside the state of Utah.

Estimating the value of local purchases made during the construction period was more problematic. Most of the information used in the construction phase analysis came from the Chicago-based engineering firm of Sargent & Lundy (S&L). At the request of IPA, S&L conducted a feasibility study of Unit 3 which included construction cost estimates. Discussions with S&L helped BEBR identify what portion of the construction cost could be allocated to Utah. The details of these estimates are presented in the construction phase section.

Understanding Economic Impacts

Historically, much confusion has surrounded economic impact analysis. Many users expect total impacts that are magnitudes larger than the direct employment and earnings and are surprised when the total impacts are less than the organization's direct activity. The confusion surrounding impact analysis stems from a misunderstanding of economic multipliers.

Economic multipliers quantify the relationship between an injection of spending in the local economy and the subsequent activity that results from that spending. How subsequent activity is defined is critical. If it is defined as a change in local spending, the multiplier may be relatively large (say 3 or 4) and the total economic impact may be three or four times as large as the initial amount of spending. For example, when a business purchases goods from a local company, typically that company must acquire materials from other companies located both inside and outside of the region. These secondary suppliers typically rely on other suppliers for raw material inputs. As suppliers rely on suppliers and employees of those suppliers spend their earnings, total spending in the local economy increases. Thus, the activities of any company would have a large impact on *local spending*.

However, if multipliers are defined in terms of employment and earnings, the total economic impact may be only slightly larger (or in most cases smaller) than the initial injection of dollars. For example, businesses use only a fraction of every dollar of new spending to pay wages, salaries and other labor-related benefits. The remainder of the dollar is applied toward investments, taxes, purchases of raw materials or purchases of services from other businesses. Thus, while the injection of new money into a region may generate an increase in local spending, it will generate much more modest increases in *local earnings*.

Multipliers that purport to measure local spending (Output Multipliers) tend to be inaccurate and potentially misleading. Output multipliers generate an *impact on local spending* estimate that involves significant double-counting as it includes purchases made by vendors of both final and intermediate goods and services. An extreme example would be a capital investment project undertaken by a local company that included the purchase of air-conditioning equipment from a local retailer. In this case the total spending estimate would include the amount paid by the company for the air-conditioning unit, the price paid by the local retailer who bought the unit from a local wholesaler, the price paid by the wholesaler who bought the unit from a local manufacturer and the amounts paid by the manufacturer who bought the raw materials from suppliers, and so on. Obviously, the *impact on local spending* estimate would not reflect the actual value generated in the local economy.

Finally, an *impact of local spending* estimate reflects the structure of the local economy rather than actual benefits conferred to the residents of that region. A dollar worth of goods purchased from one industrial sector may generate a relative large or small level of subsequent spending depending on the interdependence of that sector with the rest of the regional economy. If the

sector exhibits little interdependence, subsequent spending will be relatively low and vice versa. A low level of interdependence arises when companies within the sector are vertically integrated. In this case, a company will rely on internal or company-owned sources for raw materials and other production inputs. Because the company does not purchase materials from other businesses, it increases local spending less than does a non-vertically integrated company.

Section II
The Economic and Fiscal Impacts of Unit 3
Construction Phase

The information presented in this section includes the impacts on employment, earnings and tax revenue that result from the construction of Unit 3 (including Switchyard modifications) at the IPP facility. Unit 3 will be constructed adjacent to Unit 2 and will consist of a 950-MW (gross) generating unit. Construction of Unit 3 could begin in 2004 with an estimated completion date in 2008. Modifications made to the existing 345kV Switchyard will provide a tie-in to the new unit and will be undertaken concurrent with the construction of Unit 3.

Assumptions

The cost of constructing Unit 3 will be about $1.75 billion. This estimate includes the direct cost of labor, purchases of equipment, and materials, per diem allowances and equipment leasing. It also includes indirect costs for profit, overhead, payroll taxes, contingency fees, risk insurance and bonding fees. It does not include the cost of interest during construction. The estimated cost for modifications to the Switchyard is $5.3 million.

Using the construction of Units 1 and 2 as a model, and based on discussions with staff from both S&L and IPA, approximately $427.7 million (about 32% of the total construction cost) will be spent locally. While the difference between total spending and local spending seems significant, about 25% of the total construction cost includes contingency fees and engineering/procurement/construction (EPC) contract costs that will not involve Utah companies. The major assumptions made in this analysis are described below:

- A large share of the construction will be done by Utah workers. Based on S&L's estimates, the cost of local labor is $315.3 million and includes: (1) direct compensation of construction craft, (2) direct compensation of construction support service workers, (3) direct compensation of construction craft start-up support, (4) payroll-related taxes paid by the employer for Utah workers, (5) worker's compensation, and (6) fringe benefits and per diems.

- A large share (70%) of the construction materials will be purchased locally. The estimated value of locally purchased construction materials for Unit 3 is $140.2 million. An additional $2.5 million in materials and equipment could be purchased locally for construction activity at the Switchyard.

- S&L estimates the cost of leasing equipment used at the Unit 3 site will be $51,000,000, of which 90% will be leased from local vendors. Leased equipment will be used for specific construction tasks and includes such items as bulldozers, cranes, carryalls and trucks. It does not include equipment that will become part of the permanent facility. The estimated cost to lease equipment from local vendors will be $45,900,000.

- The cost for equipment that becomes part of the permanent facility is estimated at $336.7 million. Much (if not most) of this equipment is highly specialized and not manufactured locally. For this reason, S&L estimates that very little will be purchased from Utah manufacturers or vendors. BEBR has estimated that the value of locally purchased equipment will be $25.7 million. About $16.8 million worth of equipment will be purchased directly from Utah manufacturers. The remaining $8.9 million will be purchased through distributor representatives.

Direct Impact on Employment and Earnings

The direct impact of the construction phase includes the construction craft and support service staff employed at the construction site. Using information provided by S&L, BEBR estimated direct, FTE employment to be 2,793. The earnings of these workers, including wages, salaries and fringe benefits, totals $230.8 million. A discussion of the methodology used to derive the direct employment is provided in the Appendix Section.

The construction of Unit 3 is scheduled to proceed over a four-year period beginning as early as 2004 with an estimated completion date of October 2008. During the peak of the construction period, average annual employment at the site will exceed 1,000 workers. The average annual estimates for each year of construction are shown below.

	Estimated Direct Employment
Year 1	561
Year 2	561
Year 3	642
Year 4	1,029

The employment estimates presented here include only the direct employment at the site. The delivery dates of materials and services that will be used for construction are not available; therefore, it was not possible to determine the timing of construction-related purchases or to calculate the indirect and induced employment and income for specific years.

Indirect Impact Employment and Earnings

The indirect impacts of the construction phase have been estimated with RIMS II, an Input-Output regional model developed by the Bureau of Economic Analysis. This model provides a detailed interindustry structure for the Utah economy which shows the indirect impacts of IPP procurements from other intermediate sectors of the economy and the induced impacts that result from the purchases of IPP employees and the employees of IPP suppliers from yet other sectors of the Utah economy. A detailed discussion of the RIMS II model is presented in Section I.

Table 1 shows the estimated total impact of IPP construction on the earnings of the Utah work force. The total direct earnings are estimated to be $230.8 million. When the indirect and induced impacts are included, total earnings of Utah workers increase to $435.8 million. The earnings generated by the IPP construction project will support a total of 10,092 workers in the state of Utah over the construction period.

Table 1
Impact on Employment and Earnings
Unit 3 - Construction Phase

	Employment	**Earnings**
Direct Impact (FTE)	2,793	$230,882,373
Indirect and Induced Impacts	7,299	$204,969,314
Total Impact	10,092	$435,851,687

Note: Direct employment estimate is Full-time Equivalent. Indirect employment includes full-time, part-time and proprietor employment.
Source: Calculated by BEBR based on information from Intermountain Power Agency and Sargent and Lundy.

Estimating Fiscal Impacts

The tax impacts arising from construction activities will be significant. As a project entity created under the Interlocal Cooperation Act, all purchases of materials and equipment used in the IPP construction (with the exception of pollution abatement equipment) are subject to sales and use tax. In addition, state and local governments will realize new tax revenue from household earnings attributable to IPP construction activities.

Sales and Use Tax: In brief, sales tax is applied to sales and rentals of tangible real property, including most goods and some services. Use tax is levied on out-of-state purchases and rental of tangible property intended for use in Utah. Sales and use tax rates vary somewhat among the different counties in Utah; therefore, the selection of applicable tax rates requires that the point of sale and place of delivery be identified on each contract. For purposes of this analysis, BEBR assumed that the delivery point will be Millard County where the sales and use tax rate is 5.75%.

The amount of sales and use tax revenue generated during the construction phase is based on material and equipment cost estimates provided by S&L. These estimates show that material and equipment purchases for Unit 3 and the Switchyard will be about $484.4 million[1]. Of this, $368.7 million will be subject to sales and use tax (pollution abatement equipment totaling $115.6 million is exempt from tax).

Applying a 5.75% rate to total taxable sales results in sales and use tax revenue of $21.2 million. Of this, approximately $17.5 million will be state tax and $3.7 million will be local option sales and use tax. While it is not possible to specify the amount of sales tax revenue any one county in Utah will receive as a result of the IPP construction, Millard County should collect the largest share of the local option tax provided that the delivery point is specified on the tax return when sales and use tax is remitted to the Utah Tax Commission. If the delivery point is not specified, the local option tax is distributed throughout all counties in the state.

Fiscal Impacts Derived from Earnings

The fiscal impact estimates presented here reflect the indirect tax revenue generated by earnings attributed to the IPP construction project. To estimate the fiscal revenue from earnings, an effective state and local tax rate was derived by dividing total state and local tax receipts (less corporate income tax) by total state personal income. The base year used in deriving the ratio was 1999-2000 (the most recent year for which data are available). This ratio (10.83%) was applied to the earnings of Utah workers that are attributed to construction activities at IPP. This calculation provides a rough estimate of the relationship between income and tax revenue. Using this methodology, the construction activities at IPP will generate $47.2 million in tax revenue for state and local government coffers. [2,3]

Table 2 shows the total economic impact of employment, earnings and tax revenue during the construction phase. Table 3 shows how the direct and indirect impacts were generated. An explanation of Table 3 immediately follows.

---

[1] A $5.0 million rail car purchase is included in this taxable equipment estimate although the rail car will be used for operations. It has been included here because it represents a one-time expenditure, not a recurring operational expense.

[2] Total tax revenue (less corporate income tax) in fiscal year 1999 in Utah was $5,699,327,000. Total personal income in calendar year 1999 in Utah was $52,622,000,000. Source: U.S. Bureau of the Census, "Utah State and Local Government Finances by Level of Government and State." Accessible at http://www.census.gov.

[3] The indirect fiscal impact estimate assumes that all state and local taxes are tied directly to personal income. This is certainly the case with respect to state income tax, and to a lesser extent sales tax; however, the relationship between income and property tax is less obvious. Receipts from property tax (and possibly other types of taxes) may not be in direct proportion to an increase in earnings. Increases in property tax in particular are tied to other factors - primarily increases in property values. Therefore, these fiscal estimates should be viewed as an "upper bound" estimate of the impact on state and local tax revenues.

Table 2 Total Economic and Fiscal Impact of Unit 3 Construction Phase			
	Direct	**Indirect**	**Total**
Employment	2,793	7,299	10,092
Earnings	$230,882,373	$204,969,314	$435,851,687
Total Tax Impacts			$68,405,855
Sales and Use Tax	$21,203,118		
Earnings Derived		$47,202,737	
Source: Calculated by the Bureau of Economic and Business Research.			

Table 3
Calculation of the Economic Impact of Unit 3 Construction

Column 1 Spending Category	Column 2 Direct Utah Purchases	Column 3 Earnings Coefficient	Column 4 Earnings Generated	Column 5 Adj. Jobs Coefficient	Column 6 Jobs Generated
Agriculture	$896,603	0.6294	$564,322	27.5	25
Mining	$1,212,318	0.5456	$661,441	15.2	18
Construction	$132,253	0.5925	$78,360	19.7	3
Textile Mill Products	$411,676	0.4652	$191,512	15.8	7
Apparel	$105,758	0.5107	$54,010	23.4	2
Paper Products	$628,980	0.3362	$211,463	10.0	6
Printing	$46,756	0.5606	$26,211	18.3	1
Chemicals	$4,166,634	0.3548	$1,478,322	10.1	42
Rubber Products	$2,435,323	0.4466	$1,087,615	14.0	34
Lumber	$8,703,308	0.5023	$4,371,672	18.0	157
Stone and Clay Products	$16,513,213	0.6347	$10,480,936	18.7	309
Primary Metals	$2,415,724	0.5053	$1,220,665	14.0	34
Fabricated Metals	$10,372,802	0.6036	$6,261,023	18.6	193
Industrial Machinery	$3,261,124	0.5439	$1,773,726	14.9	49
Electronics	$6,356,057	0.5108	$3,246,674	14.1	90
Transportation Equipment	$217,082	0.5378	$116,220	13.2	3
Instruments	$480,920	0.5091	$244,836	14.5	7

Table 3 (continued)
Calculation of the Economic Impact of Unit 3 Construction

Spending Category	Utah Purchases	Earnings Coefficient	Earnings Generated	Adj. Jobs Coefficient	Job Years Generated
Miscellaneous Manufacturing	$506,524	0.5540	$280,614	19.8	10
Transportation	$3,195,666	0.6836	$2,184,557	21.2	68
Communications	$619,852	0.5371	$332,922	15.5	10
Electric, Gas, Sanitary Services	$449,526	0.4254	$191,228	10.3	5
Wholesale Trade	$1,503,265	0.5991	$900,606	17.4	27
Retail Trade	$2,025,562	0.6488	$1,314,185	28.6	58
Depository/Nondepository Institutions	$949,148	0.6438	$611,062	24.9	24
Insurance	$21,400,060	0.8038	$17,201,369	25.6	548
Real Estate	$840,496	0.1330	$111,786	5.2	4
Hotels and Other Lodging Places	$159,416	.06703	$106,856	31.7	5
Personal Services	$86,387	0.7461	$64,454	41.2	4
Business Services	$13,636,741	0.7392	$10,080,279	24.1	328
Eating and Drinking Places	$172,330	0.6534	$112,600	40.3	7
Health Services	$1,085,854	0.8110	$880,628	24.5	27
Special Industrial Equipment	$16,837,000	0.5897	$9,928,779	18.7	315
Miscellaneous Equipment Rental	$45,900,000	0.5376	$24,675,840	17.3	793
Households	$29,117,662	0.3997	$11,638,330	15.7	458

Table 3 (continued)
Calculation of the Economic Impact of Unit 3 Construction

Spending Category	Utah Purchases	Earnings Coefficient	Earnings Generated	Jobs Coefficient	Job Years Generated
Direct Compensation	$230,882,373	0.3997	$92,283,684	15.7	3,630
Total	$427,724,393		$204,969,314		7,299
Total Direct Impact			**$230,882,373**		**2,793**
Total Indirect and Induced Impact			**$204,969,314**		**7,299**
Total Economic Impact			**$435,851,687**		**10,092**

Adj. Jobs Coefficient: Number represents number of jobs created per $1.0 million of purchases. The coefficient has been adjusted to account for inflation.

Understanding the Impacts

Tables 3 and 6 (Section III) illustrate how the economic impacts to construct and operate Unit 3 were derived. The information is presented in a six-column spreadsheet.

The first column of the spreadsheet, "Spending Category," identifies the Utah industrial sectors from which purchases will be made for construction and/or operation of Unit 3.

The entries in Column 2, "Direct Utah Purchases," show the estimated purchases made by IPP (or contractors on behalf of the IPP project) from suppliers in each industrial sector. Therefore, the total in Column 2 reflects the inputs that flow into the economy as a result of purchases made in the construction of or operation of Unit 3. These totals only include the amounts that will be spent in Utah.

A further refinement in Column 2 is the adjustment to purchases in the Wholesale and Retail Trade sectors. Expenditures in these sectors have been reduced to reflect Utah's trade margin. The trade margin represents the outputs of each trade sector defined as sales less the cost of good sold. In Utah, the wholesale trade margin is estimated to be 10%. The retail trade margin is estimated to be 32%.

Column 3 shows the earnings coefficients taken from the RIMS II input-output model of the Utah economy. These coefficients estimate the indirect and induced earnings generated by a dollar of direct purchases in a specific spending sector.

Column 4 is the product of Column 3 and Column 2; that is, it is obtained by multiplying the value in Column 2 by the coefficient in Column 3. Therefore, each value in Column 4 shows the indirect and induced earnings of Utah households that will result from purchases made in the corresponding sector.

Column 5 provides an adjusted jobs coefficient. This coefficient shows the number of jobs that will be created or sustained in the local economy for every $1.0 million worth of purchases in the corresponding sector. The jobs coefficients have been adjusted downward to account for price inflation between the RIMS II model year of 2000 and the present. No adjustments have been made to account for future price inflation.

Column 6 is the product of Column 2 and Column 5 and is obtained by multiplying the amount shown in Column 2 by the job coefficient in Column 5.

The total economic impact is the sum of the amounts shown in rows "Direct Economic Impact" and "Indirect and Induced Economic Impact." The earnings figure presented in the row "Direct Economic Impact" is simply the compensation paid directly to IPP workers or workers who will be directly employed at the construction site. The earnings presented in the row titled "Indirect and Induced Economic Impacts" is the sum of earnings generated in all sectors from which purchases will be made (the sum of all entries in Column 4). Included in this total are wages, salaries, proprietor's income, and wage supplements. The "Total Economic Impact" is the sum of the direct impact and the indirect and induced impact.

The jobs total presented in the row “Direct Economic Impact” represents the total estimated direct employment at Unit 3, or in the case of construction, the estimated number of construction craft and support service workers. The “Total Indirect and Induced Impact” represents the number of year-round, part-time and full-time jobs that will be generated by IPP-related purchases. The jobs shown in the “Total Economic Impact” row are merely the sum of direct impact and indirect and induced impacts.

Caveats to the Impacts

The impacts presented in this study are based on purchases made in the local economy. In some cases, purchases may be either greater or less than the estimate made by BEBR; therefore, the actual impact of the state’s economy will vary depending upon where goods and services are purchased

The most significant differences could be in the estimates of earnings and jobs generated during the construction phase. The degree to which Utah labor is preferred to non-Utah labor and local sources of materials used over non-local sources will significantly affect the estimates presented in this study. BEBR has assumed, based on discussions with S&L, that much of the labor and a significant portion of the construction materials could be purchased from local sources. This assumption is reflected in the impact estimates. Of less concern are estimates of local purchases for equipment. Much of the equipment that will be incorporated into the facility is not manufactured in Utah and BEBR’s estimates regarding the impact on the local economy reflect this assumption.

Section III
The Economic and Fiscal Impacts of Unit 3
Operations Phase

The impacts presented in this section do not represent the full economic impact of operating the IPP facility; rather, they reflect the net economic impact of operating Unit 3 when it becomes operational. The information used in this analysis was provided by the Intermountain Power Agency (IPA) and is based on the cost of operating existing generating units at IPP.

Overview

The Intermountain Power Project began in the mid-1970s as a collaborative planning effort to address concerns about future demands for electricity and the capacity of existing resources to meet those demands. Utah public power interests initiated this effort with the formation of the Intermountain Power Agency - a political subdivision of the State of Utah formed by 23 Utah municipalities.

As the result of those early planning efforts, the Intermountain Power Project was conceived. While the original plan included four 750-MW (gross) coal-fired units, the project was eventually scaled back to two 750-MW (gross) units which became operational in 1986 and 1987. Presently, IPP includes a two-unit coal-fired steam electric generating station, two transmission systems, a microwave communication system and a railcar service center. The generating station (Units 1 and 2) has a gross capacity of 1,900 megawatts due to plant upgrades over the years. The facility burns more than 5.0 million tons of coal annually (about one-fifth of Utah's total coal production) supplied by Utah mines.

Located in Millard County (about 100 miles southwest of Salt Lake City), IPP is a significant part of the county's economic base. With almost 500 employees, IPP is the largest private employer in Millard County, accounting for 13% of the region's non-farm employment in 2002.

The new unit, to be known as Unit 3, will be located at the existing IPP generation site and will be a near replica of the existing Units 1 and 2. It will be located adjacent to Unit 2 and will consist of a 950-MW (gross) generating unit. The new unit will provide employment for an additional 75 people and pay wages, salaries and benefits totaling $6.4 million. The unit will burn about 2.6 million tons of Utah coal annually.

Impact of Operations

To operate Unit 3, IPP will spend about $111.0 million annually in the local economy. These expenditures include wages and salaries paid to Utah workers and payments to Utah vendors and suppliers. Purchases of labor and coal represent the largest expenditures and will account for 70% of all Utah spending.

The direct impact of Unit 3 is measured by the wages, salaries and fringe benefits paid by the company to its employees. The indirect benefits are measured by examining the flows of IPP's direct purchases from Utah suppliers. The induced impacts measure the effects of subsequent spending by IPP employees and the employees of suppliers that provide goods and services to

IPP as these individuals purchase goods and services from secondary and tertiary suppliers. The sum of the direct, indirect and induced impacts provide the total economic impact on the Utah economy of operating Utah 3.

When Unit 3 is fully operational, it will employ an additional 75 workers. The wage, salary and fringe benefit payments for these workers will total $6.4 million. This represents the direct impact on the Utah economy. The indirect and induced impacts have been estimated using the RIMS II Input-Output Model. As shown in Table 4, the operation of Unit 3 will support 1,862 Utah workers and provide earnings of $73.8 million annually. These impacts will continue as long as Unit 3 remains in operation.

Table 4
Impact on Employment and Earnings
Unit 3 - Operations

	Employment	Earnings
Direct Impact	75	$6,364,425
Indirect and Induced Impacts	1,787	$67,432,649
Total Impact	1,862	$73,797,074

Note: Direct employment estimates include full-time and part-time employment. Indirect employment estimates reflect all full-time, part-time and proprietor employment.
Source: Calculated by BEBR based on information from Intermountain Power Agency and Sargent and Lundy.

Fiscal Impacts

The fiscal benefits to state and local government treasuries from the operation of Unit 3 include (1) Fee-in-Lieu of property tax payments, (2) Gross receipt tax payments (3) Sales and use tax payments for materials purchased to operate the facility and (4) taxes derived from the direct, indirect and induced earnings generated as a result of IPP operations. When combined, these tax revenues will be significant.

Based on estimates provided by IPA, fee-in-lieu, gross receipts and sales and use taxes related to the operations of Unit 3 will total about $9.2 million annually. State and local governments will also realize an increase in tax revenue in a more indirect way, from earnings generated by the operation of Unit 3.

To estimate the fiscal revenue from earnings, an effective state and local tax rate was derived by dividing total state and local tax receipts (less corporate income tax) by total state personal income.

The base year used in deriving the ratio was 1999-2000 (the most recent year for which data are available). This ratio (10.83%) is applied to the earnings of Utah workers that can be attributed to construction activities at IPP. This calculation provides a rough estimate of the relationship between income and tax revenue. Using this methodology, the earnings derived from the operation of Unit 3 will generate about $8.0 million annually in tax revenue for state and local government coffers. The total tax impacts of operations are shown in Table 5.

Table 5
Total Economic and Fiscal Impact of Unit 3
Operations Phase

	Direct	Indirect	Total
Employment	75	1,787	1,862
Earnings	$6,364,425	$67,432,649	$73,797,074
Tax Impact			
Fee-in-Lieu Tax	$6,000,000		
Gross Receipts Tax	$3,050,000		
Sales and Use Tax	$130,000		
Earnings Derived Taxes		$7,992,223	
Total			$17,172,223

Source: Fee-in-Lieu Tax, Gross Receipts Tax, Sales and Use Tax: Intermountain Power Agency; Earnings Derived Taxes: Bureau of Economic and Business Research.

Table 6 shows how the direct and indirect impacts were generated. The explanation for Table 6 is provided on page 14.

Impact on Utah's Mining Industry

IPP is a large user of Utah-produced coal and plays an extremely important role in sustaining Utah's coal mining industry. In 2002, IPP burned more than 5.3 million tons of Utah coal to produce 13,995 gigawatt-hours of electricity. Virtually all of the coal used in this generation process came from Utah mines. The coal used by IPP in its generation process last year represented about one-fifth of all coal produced in Utah during 2002.

To put IPP's impact on the coal mining industry in perspective, the company's coal usage last year sustained 330 jobs in the coal mining sector, or about 23% of all coal mining employment in Utah. The use of an additional 2.6 million tons of coal will sustain about 165 more workers in the coal mining sector.

Table 6
Calculation of the Economic Impact of Unit 3 Operations

Column 1 Spending Category	Column 2 Direct Utah Purchases	Column 3 Earnings Coefficient	Column 4 Earnings Generated	Column 5 Adj.Jobs Coefficient	Column 6 Jobs Generated
Greenhouse/Nursery Products	$10,000	0.4796	$4,796	18.9	0
Coal	$72,000,000	0.5981	$43,063,200	14.5	1,047
Limestone	$300,000	0.6547	$196,410	20.5	6
Maintenance/Repair Construction	$11,666,000	0.6880	$8,026,208	22.2	260
Paper Products	$4,170	0.3362	$1,402	10.0	0
Chemicals	$348,000	0.3548	$123,470	10.1	4
Fabricated Metal Products	$54,010	0.6036	$32,600	18.6	1
Industrial Machinery and Equipment	$853,000	0.5439	$463,947	14.9	13
Electronic and Electrical Equipment	$169,420	0.5108	$86,540	14.0	2
Transportation Equipment	$145,950	0.5378	$78,492	13.1	2
Instruments and Related Products	$13,950	0.5091	$7,102	14.5	0
Railroads	$13,737,000	0.7015	$9,636,506	18.0	248
Transportation	$71,130	0.6836	$48,624	21.1	2
Electricity	$1,200,000	0.4192	$503,040	9.8	12
Retail Trade	$50,000	0.6650	$10,640	19.6	0
Wholesale Trade	$226,300	0.6106	$13,818	18.2	1
Banking Services	$854,000	0.4932	$421,193	15.6	13

Table 6 (continued)
Calculation of the Economic Impact of Unit 3 Operations

Spending Category	Utah Purchases	Earnings Coefficient	Earnings Generated	Adj. Jobs Coefficient	Job Years Generated
Insurance	$880,309	0.8038	$707,592	25.6	23
Hotels and Other Lodging	$450,000	0.6703	$301,635	31.7	14
Automotive Repair	$30,000	0.6413	$19,239	22.9	1
Electrical Repair Shops	$100,000	0.6973	$69,730	26.8	3
Engineering and Architectural Services	$50,000	0.8539	$42,695	27.9	1
U.S. Postal Service	$5,000	0.9152	$4,576	27.8	0
Business Services	$1,305,000	0.7392	$964,656	24.0	31
Eating and Drinking Places	$30,000	0.6709	$20,127	40.9	1
Health Services	$50,000	0.8110	$40,550	24.5	1
Direct Compensation	$6,364,425	0.3997	$2,543,861	15.7	100
Total	$110,967,664		$67,432,649		1,787
Total Direct Impact			**$6,364,425**		**75**
Total Indirect and Induced Impact			**$67,432,649**		**1,787**
Total Economic Impact			**$73,797,074**		**1,862**

Adj. Jobs Coefficient: Number represents number of jobs created per $1.0 million of purchases. The coefficient has been adjusted to account for inflation.

Appendix
Methodology Used to Estimate
Direct Construction Employment and Earnings

Direct Employment and Earnings Estimates

The information used to derive the direct construction craft and support workers was provided by S&L based on their feasibility study completed in September 2002. In that study, S&L developed a pro forma report detailing cost estimates of constructing Unit 3 (including Switchyard modifications). Using the construction of Unit 1 and Unit 2 as a model, S&L was able to provide BEBR with estimates regarding the amount of materials and value of equipment that could be purchased from Utah suppliers. In addition, S&L. provided BEBR with an estimate of the man-hours of labor that could be supplied with workers and the associated payroll costs for that labor.

The direct employments estimate for **construction craft** workers of for Unit 3 was derived by converting the total man-hour's estimate provided by S&L. to man-years of work. According to S&L a total of 6.4 million man-hours of work will be supplied by Utah labor. Labor work hours are based on 5-10 hour days per week. To convert man-hours to jobs, BEBR estimated the number of hours one person would work in one year based on a 10-hour work day. That total is 2,600 hours per year (52 x 50). The conversion from man-hours to man-years is obtained by dividing the man-hour estimate of 6.4 million hours by 2,600 hours per year. This results in the direct, full-time employment estimate for construction of 2,462 workers. Compensation paid to these workers was estimated to be $230,882,373 (net of employer paid payroll taxes).

Support services workers and start-up workers will also be needed at the job site. The direct employment and payroll cost estimates for **support services** workers were developed by S&L and provided to BEBR. The wages, salaries and fringe benefit portion of the payroll cost was developed by BEBR using rate table reports provided by S&L.

The direct employment total for **start-up workers** was calculated by BEBR based on ratios and assumptions used in developing estimates for construction craft workers. The total payroll cost for start-up workers will be $4.0 million. Again, the total payroll cost was modified by BEBR to include wages, salaries and fringe benefits based on rate table reports provided by S&L.

Indirect Employment and Earnings Estimates

To calculate the indirect earnings and employment of construction, BEBR identified the sectors of the Utah economy from which purchases would be made. This was done using the 1992 National Income Products Accounts (NIPA) to identify those industries that provide inputs to the construction sector. To obtain the ratio of input from each contributing industry, the producer price of goods and services in each industry was divided by the total of producer prices in all industries. The ratio that each industry contributed to the total was then applied to the total estimated cost of materials that will be purchased from local suppliers for the construction of Unit 3. Each NIPA industry was then classified according to the RIMS II model sectors and the value of procurements for IPP from local sources allocated to the appropriate sector. The procurement amount for each sector was multiplied by the corresponding RIMS II coefficients to derive the indirect and induced employment and earnings that result from IPP construction purchases.