



## The Economic Impact of the Disaster NEG Grant in the Joplin Region of Southwest Missouri

After the May 2011 tornado, the state of Missouri was awarded a \$15.9 million Disaster NEG grant. This grant is estimated to generate a total economic impact of \$37.6 million and support 1,658 cumulative temporary jobs in the Joplin region for the duration of the grant from 2011 through 2013.

Prepared  
for

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# 1. Executive Summary

On May 22, 2011, an EF-5 tornado struck the Joplin region in Southwest Missouri.<sup>1</sup> The tornado resulted in severe wind damage and flash flooding across the region. On May 27, 2011, the Department of Labor awarded a \$15.9 million Disaster National Emergency Grant (NEG) to the state. The economic impact of the Disaster NEG grant in the Joplin region is summarized below:

**By the end of February 2013, a total of \$14.2 million of the grant had been spent.**

- \$6.8 million was spent to hire workers to perform debris removal.
- \$2.0 million was paid to workers performing humanitarian assistance.
- \$4.6 million was used to purchase other services and supplies.
- The remainder of the grant was used to pay Workforce Investment Board (WIB) staff and contractor wages.

**By the end of February 2013, 1,450 temporary jobs were directly generated by the Disaster NEG grant.**

- The average worker hired for disaster relief performed 617 hours of service, or the equivalent of 77 working days (with 8 hours in a working day).
- Those workers performed 894,945 hours of services, including:
  - 644,810 hours of debris removal
  - 208,281 hours of humanitarian services
  - The remaining hours were administrative or other services

**The total economic impact (which includes direct, indirect, and induced impacts) of the Disaster NEG grant can reach \$37.6 million in the Joplin region for the duration of the grant from 2011 to 2013.**

- The estimated economic impact is based on spending the full grant amount of \$15.9 million.
- Most of the grant is used to pay wages and salaries. The work completed by those employees can generate a direct economic impact of \$24.2 million in the region.
- The indirect impact in the Joplin region is estimated to total \$6.0 million. The induced impact in the region is estimated to be \$7.3 million from 2011 to 2013. Every dollar of the Disaster NEG grant can generate an additional \$1.36 spending in the Joplin region.
- It is estimated that the grant will directly generate 1,538 cumulative jobs in the region for the duration of the grant from 2011 through 2013.
- It is estimated that 53 and 68 cumulative jobs will be supported in the Joplin region due to indirect and induced impacts in the Joplin region. Each job directly employed by the Disaster NEG grant can support additional 0.14 job in the Joplin region.
- On an annual average basis, the total economic impact of the Disaster NEG grant is estimated to be \$12.5 million per year from 2011 through 2013, which supports 553 annual jobs in the Joplin region.

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<sup>1</sup> EF stands for Enhanced Fujita Scale. The Joplin region is defined as the counties of Jasper and Newton.

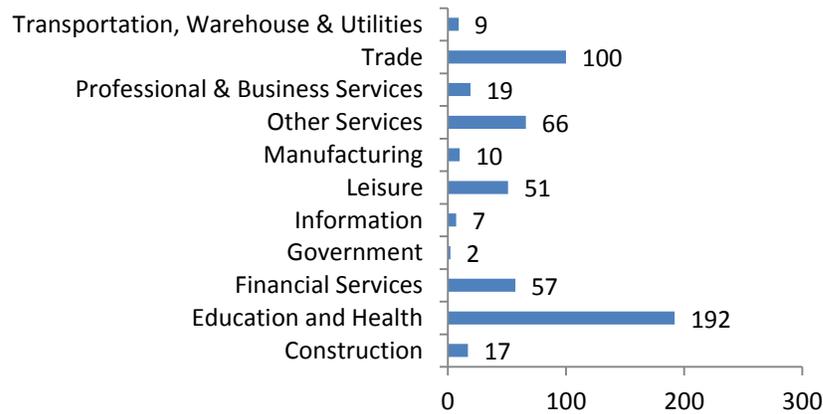
## 2. Background

The city of Joplin is located in Jasper County, Missouri. It lies in the southwest corner of the state near the border with Kansas, Oklahoma, and Arkansas. According to the 2010 Census, the city had a population of 50,150. The Joplin Metropolitan Statistical Area (MSA), which includes the counties of Jasper and Newton, had a population of 175,518, according to the 2010 Census. The area’s major industries include agriculture, education, health and social services, manufacturing, and retail trade.<sup>2</sup>

On May 22, 2011, an EF-5 tornado struck the Joplin region. The tornado generated severe wind damage and flash flooding across Southwest Missouri. The storm’s path directly passed through the city of Joplin, and resulted in catastrophic loss of life and destruction. The tornado killed 161 people and injured more than 1,000. Approximately 4,000 houses were destroyed; approximately 3,500 houses were severely damaged. Nearly 530 businesses were closed right after the tornado, affecting approximately 5,000 employees, around 3,000 of which were kept on payroll in some capacity.<sup>3</sup>

The widespread impact of the Tornado can be shown in Figure 21. The affected businesses cover a wide range of industry sectors, impacting the overall economic function of the region. Among those, 192 establishments in the education and health sector were affected, and 100 businesses in the trade sector were affected. Other industries such as financial services and leisure also experienced a large number of business closings.

**Figure 2.1: Businesses Impacted Due to Tornado**



<sup>2</sup> Source: The Response to the 2011 Joplin, Missouri, Tornado, Lessons Learned Study, December 20, 2011, by FEMA.

<sup>3</sup> Source: Southwest Missouri Workforce Investment Board (WIB).

The tornado caused tremendous damage that was estimated to be between two and three billion dollars.<sup>4</sup> It is estimated that three million cubic yards of debris resulted from the tornado.<sup>5</sup> The debris needed to be removed and the areas cleaned. Houses, businesses, and other infrastructures needed to be repaired in the aftermath of the tornado.

The funding for Joplin's recovery from this disaster came from different sources. A large portion of the rebuilding effort came from insurance industry payments. The federal government also provided funding for disaster relief and recovery totaling \$350 million, based on a March 2013 estimate.<sup>6</sup> Those funds are used to provide emergency assistance such as food and shelter, to help repair public infrastructure, and to help businesses and residents rebuild their lives.

Among the federal funding received by the Joplin region is the Disaster National Emergency Grant (NEG). On May 27, 2011, the Department of Labor awarded a Disaster NEG grant of \$15.9 million to the state. A Disaster NEG grant is awarded to states in response to disasters—as declared by the Federal Emergency Management Agency (FEMA)—as eligible for public assistance allowed under Workforce Investment Act (WIA). These grants provide resources to fund short-term, temporary disaster relief employment to assist communities recovering from a disaster by working on (1) projects that provide food, clothing, shelter, and other humanitarian assistance for disaster victims; and (2) projects at public worksites to conduct demolition, clearing, repair, renovation, and reconstruction of damaged and destroyed public structures, facilities, and land located within the disaster area. Some reconstruction or repair work may be performed on private residences of low-income individuals if authorized.<sup>7</sup>

Compared with the overall scale of the damage caused by the tornado, the Disaster NEG grant received by the region is a small component of the total federal assistance package in the aftermath of the disaster. But the grant has made a significant impact in the Joplin region by providing temporary employment for over one thousand displaced workers. It also provides a necessary workforce for debris removal and humanitarian assistance, thus potentially speeding the region's recovery from the disaster.

The Southwest Missouri workforce investment board (WIB) needs to understand the economic impact of the Disaster NEG grant on the Joplin region, and retained Chmura Economics & Analytics (Chmura) to conduct such a study. The remainder of the report details the spending activities of the grant and its impact in the region.

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<sup>4</sup> Source: Missouri Department of Insurance says Joplin disaster will be the most costly insurance payout in state history. <http://www.liveinsurancenews.com/missouri-department-of-insurance-says-joplin-disaster-will-be-the-most-costly-insurance-payout-in-state-history/854253/>.

<sup>5</sup> Source: The Response to the 2011 Joplin, Missouri, Tornado, Lessons Learned Study, December 20, 2011, by FEMA.

<sup>6</sup> Source: Joplin to receive \$113 million in federal aid. <http://www.joplinglobe.com/tornadomay2011/x1499314862/Joplin-to-receive-113-million-in-federal-aid>.

<sup>7</sup> Source: National Emergency Grant (NEG) Disaster Grants Monitoring Guide. Available at: <http://www.workforce.ky.gov/monitoring/PY2012NEGDisasterGrantsGuide.pdf>

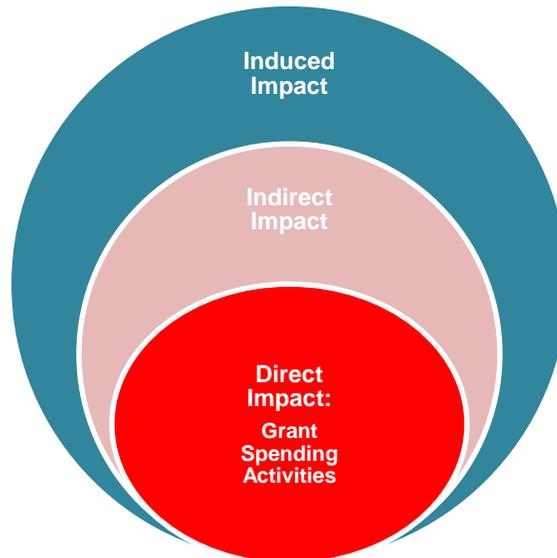
### 3. Economic Impact Methodology

The economic impact of the Disaster NEG grant is measured from the following source:<sup>8</sup>

- Spending activity of the grant.** The total Disaster NEG grant is \$15.9 million. The majority of the grant is used to provide temporary employment for displaced workers in the region. As temporary workers perform tasks such as debris removal and humanitarian assistance, those activities will generate an economic impact in the region.

The component above constitutes the direct economic impact of the Disaster NEG grant in the Joplin region. The total economic impact also includes the ripple effects from the direct impacts. Ripple effects, categorized as indirect and induced impacts (see Appendix 1 for definitions), measure the secondary benefits generated by the grant spending activities. They include benefits to businesses providing supplies to grant agencies. For example, workers performing debris removal need to purchase equipment and supplies.<sup>9</sup> These effects also include benefits to local businesses that cater to workers supported by the grant.<sup>10</sup>

**Figure 3.1: Economic Impact Analysis Framework**



Background data for the direct impact, such as the NEG grant amount and spending activities, were provided by the Southwest Missouri WIB. The indirect and induced impacts were estimated with IMPLAN Pro<sup>®</sup> software after the direct impact was identified.<sup>11</sup> Total grant spending data were input into the various IMPLAN model sectors to

<sup>8</sup> None of the Disaster NEG Grant was used to restore business properties. As a result, the impact of the grant on business operation is not included in this study.

<sup>9</sup> This is defined as indirect impact.

<sup>10</sup> This is defined as induced impact.

<sup>11</sup> *IMPLAN Professional (IMPLAN Pro<sup>®</sup>)* is an economic impact assessment modeling system developed by the Minnesota IMPLAN Group that is often used by economists to build economic models that estimate the impacts of economic changes in local economies.

estimate the indirect and induced impacts for each sector. These impacts were aggregated to yield the estimates of the overall economic impact of the Disaster NEG grant in the Joplin region.

At the time of this study, about 89% of the Disaster NEG grant had been spent, with the remainder to be spent in future months. This analysis is conducted on the economic impact of the full grant amount, assuming that the future spending pattern of the grant is similar to the spending pattern that has already occurred.



## 4. Joplin Disaster NEG Grant Activities

After the tornado, the total Disaster NEG grant amount awarded to the state of Missouri was \$15.9 million. As of the end of February 2013, a total of \$14.2 million had been spent (Table 4.1). Among this, \$6.8 million was spent to hire workers to perform debris removal, \$2.0 million was spent to hire workers to perform humanitarian assistance, \$4.6 million was spent to purchase other service and supplies, and the rest was spent on WIB staff and contractor wages.

**Table 4.1: Disaster NEG Grant Spending Activities (2011-2013)**

	Number of People	Hours of Employment	Amount of Wages/Expenses
Administration (Contractor)	26	41,855	\$612,769
Administration (WIB)	8		\$193,447
Participants (Debris)	1,083	644,810	\$6,765,734
Participants (Humanitarian)	333	208,281	\$2,045,574
Other Service and Supplies			\$4,620,547
Future Spending (After 02/28/13)			\$1,616,929
<b>Total</b>	<b>1,450</b>	<b>894,945</b>	<b>\$15,855,000</b>

Source: Southwest Missouri WIB

As of the end of February 2013, 1,450 temporary workers had been hired as a result of the grant. They provided 894,945 hours of services, including 644,810 hours of debris removal and 208,281 hours of humanitarian services. Individuals eligible for such temporary jobs include workers who were temporarily dislocated as a result of the disaster, dislocated workers who met the Workforce Investment Act definition,<sup>12</sup> or long-term unemployed individuals.<sup>13</sup>

The jobs are temporary. Based on data provided by Southwest Missouri WIB, average participants hired by the grant performed 617 hours of service, or the equivalent of 77 working days (with 8 hours in a working day). While the jobs created by the Disaster NEG grant helped those dislocated workers, they by no means substituted for full-time employment.

The Disaster NEG grant helped to alleviate the unemployment situation in the region. In May 2011, the unemployment rate of the Joplin region was 7.4%, with 6,449 unemployed workers.<sup>14</sup> It is estimated that the tornado resulted in approximately 2,000 lost jobs.<sup>15</sup> Without the Disaster NEG grant, the unemployment rate for the Joplin region could reach 9.7%. However, the unemployment rate for the region in June 2011 increased to only 8.7%, which continued to decline for five consecutive months to 6.4% in December 2012. These data indicate that

<sup>12</sup> WIA definition of dislocated worker can be found at Department of Labor, Employment and Training Administration.

[http://www.doleta.gov/programs/general\\_info.cfm](http://www.doleta.gov/programs/general_info.cfm)

<sup>13</sup> Eligibility for Disaster NEG Grant participants can be found at:

<http://www.doleta.gov/regions/reg06/Documents/ConferenceFiles2011/NEGApplicationProcess/DisasterNEGGuidebook.doc>.

<sup>14</sup> Source: Bureau of Labor Statistics,

[http://data.bls.gov/pdq/SurveyOutputServlet;jsessionid=3B292377315B4DC0591D014AB25D9FAF.tc\\_instance5](http://data.bls.gov/pdq/SurveyOutputServlet;jsessionid=3B292377315B4DC0591D014AB25D9FAF.tc_instance5)

<sup>15</sup> Source: Southwest Missouri WIB.

the jobs created by the Disaster NEG grant played an important role in preventing a dramatic rise in unemployment rate in the region in the months after the disaster.



## 5. Economic Impact of the Disaster NEG Grant in the Joplin Region

As reported in Section 4, as of the end of February 2013, a total of \$14.2 million of the \$15.9 million Disaster NEG grant has been spent after the Joplin tornado. This study estimates the economic impact of the full grant amount, assuming that the rest of the grant (\$1.6 million) will be spent in a similar pattern as the \$14.2 million.

The economic impact of a grant such as the Disaster NEG grant in Joplin is usually measured as the total output generated by the grant in the region. The portion of the grant spent to purchase supplies and other services represents the economic output of those activities. For the portion of the grant that is paid to hire temporary workers, this spending only represents the labor income part of those activities. The direct economic impact (economic output) also includes other components such as equipment rental or supply purchases, which is presumably paid by other grants or donated by different organizations.<sup>16</sup> However, without the NEG grant providing necessary labor, those economic activities would not materialize. As a result, the estimated direct impact will be larger than the grant amount. Overall, the \$15.9 million of grant spending is equivalent to \$24.2 million in economic output from 2011 through 2013.

When entering the direct impact of \$24.2 million into the IMPLAN model, it is estimated that spending activities of the Disaster NEG grant can generate a total economic impact (including direct, indirect, and induced impacts) of \$37.6 million in the Joplin region from 2011 through 2013. Aside from the \$24.2 million in direct economic impact in the Joplin region, the indirect impact in the region is estimated to total \$6.0 million. The beneficiaries of the indirect impact are regional businesses that provide supplies to the NEG grant workers, such as truck transportation for debris removal, or food/clothing supplies for humanitarian assistance. The induced impact in the region is estimated at \$7.3 million from 2011 to 2013. The beneficiaries of the induced impact are mostly consumer-service related businesses such as retail shops, restaurants, and healthcare providers. Every dollar of the Disaster NEG grant can generate additional \$1.36 spending in the Joplin region.

**Table 5.1: Economic Impact of Disaster NEG Grant Spending Activities in Joplin Region**

		Direct	Indirect	Induced	Total Impact
Cumulative Total (2011-2013)	Spending (\$Million)	\$24.2	\$6.0	\$7.3	\$37.6
	Employment	1,538	53	68	1,658
Annual Average (2011-2013)	Spending (\$Million)	\$8.1	\$2.0	\$2.4	\$12.5
	Employment	513	18	23	553

Note: Numbers may not sum due to rounding  
Source: IMPLAN Pro 2011 and Chmura

Since the majority of the funding is used to hire temporary workers, the Disaster NEG grant provides over one thousand job opportunities in the region. It is estimated that the grant will directly support 1,538 cumulative jobs for

<sup>16</sup> Chmura has no data on other funding sources, except that the Disaster NEG grant provided funding to hire those temporary workers. Chmura used IMPLAN model to estimate the economic output that is equivalent to the labor income spent by the Disaster NEG grant.

the duration of the grant from 2011 through 2013.<sup>17</sup> However, those jobs are not full-time equivalent jobs. On average, each worker performs about 617 hours of work, with an hourly wage of \$10.50. Though not full-time, those jobs provide temporary relief and essential income for regional residents, especially residents whose jobs were lost due to the tornado. In addition, the Disaster NEG grant will support job opportunities in other industries through the indirect and induced impact. It is estimated that the cumulative jobs supported in the Joplin region due to indirect and induced impacts are 53 and 68, from 2011 through 2013. Each job directly employed by the Disaster NEG grant can support additional 0.14 job in the Joplin region.

On an annual average basis, the total economic impact of the Disaster NEG grant is estimated to be \$12.5 million per year from 2011 through 2013, which supports 553 annual jobs in the Joplin region.

There are other potential impacts from the Disaster NEG grant in the Joplin region. For example, the debris removal work in public facilities will help those agencies open earlier than projected, thus facilitating recovery work for other businesses and residents. Those impacts are difficult to quantify and thus not included in this study.

The Joplin tornado caused an estimated two billion dollars in damage in the Joplin region. The Disaster NEG grant has made valuable contributions to the recovery of the region after the disaster. More importantly, the grant has provided work for over 1,500 regional workers who were affected by the tornado. This has provided much-needed relief and income until the region can recover and those workers can find permanent employment.

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<sup>17</sup> This number is larger than the number reported in Table 4.1, as Chmura estimated additional jobs that can be supported by the grant after February 28, 2013.

## Appendix 1: Impact Study Glossary

*IMPLAN Professional* is an economic impact assessment modeling system. It allows the user to build economic models to estimate the impact of economic changes in states, counties, or communities. It was created in the 1970s by the Forestry Service and is widely used by economists to estimate the impact of specific event on the overall economy.

*Input-Output Analysis*—an examination of business-business and business-consumer economic relationships capturing all monetary transactions in a given period, allowing one to calculate the effects of a change in an economic activity on the entire economy (impact analysis).

*Direct Impact*—economic activity generated by a project or operation. For construction, this represents activity of the contractor; for operations, this represents activity by tenants of the property.

*Overhead*—construction inputs not provided by the contractor.

*Indirect Impact*—secondary economic activity that is generated by a project or operation. An example might be a new office building generating demand for parking garages.

*Induced (Household) Impact*—economic activity generated by household income resulting from the direct and indirect impact.

*Multiplier*—the cumulative impacts of a unit change in economic activity on the entire economy.