MISSOURI STATE AUDITOR'S OFFICE
FISCAL NOTE (16-173)

Subject

Initiative petition from Andy Zellers regarding a proposed amendment to Chapter 386 of the Revised Statutes of Missouri. (Received December 17, 2015)

Date

January 6, 2016

Description

This proposal would amend Chapter 386 of the Revised Statutes of Missouri.

The amendment is to be voted on in November 2016.

Public comments and other input

The State Auditor's office requested input from the **Attorney General's office,** the **Department of Agriculture,** the **Department of Economic Development,** the **Department of Elementary and Secondary Education,** the **Department of Higher Education,** the **Department of Health and Senior Services,** the **Department of Insurance, Financial Institutions and Professional Registration,** the **Department of Mental Health,** the **Department of Natural Resources,** the **Department of Corrections,** the **Department of Labor and Industrial Relations,** the **Department of Revenue,** the **Department of Public Safety,** the **Department of Social Services,** the **Governor's office,** the **Missouri House of Representatives,** the **Department of Conservation,** the **Department of Transportation,** the **Office of Administration,** the **Office of State Courts Administrator,** the **Missouri Senate,** the **Secretary of State's office,** the **Office of the State Public Defender,** the **State Treasurer's office, Adair County, Boone County, Callaway County, Cass County, Clay County, Cole County, Greene County, Jackson County Legislators, Jasper County, St. Charles County, St. Louis County, Taney County,** the **City of Cape Girardeau,** the **City of Columbia,** the **City of Jefferson,** the **City of Joplin,** the **City of Kansas City,** the **City of Kirksville,** the **City of Mexico,** the **City of Raymore,** the **City of St. Joseph,** the **City of St. Louis,** the **City of Springfield,** the **City of Union,** the **City of Wentzville,** the **City of West Plains, Cape Girardeau 63 School District, Hannibal 60 School District, State Technical College of Missouri, Metropolitan Community College, University of Missouri, St. Louis Community College,** and the **Public Service Commission.**

Mark R. Reading provided information to the State Auditor's Office as a proponent of this initiative petition.

Edward D, Greim of Graves Garrett LLC provided information to the State Auditor's Office as an opponent of this initiative petition.

Brent Stewart of Association of Missouri Electric Cooperatives provided information to the State Auditor's Office as an opponent of this initiative petition.

Assumptions

Officials from the **Attorney General's office** indicated they assume that any potential costs arising from the adoption of this proposal can be absorbed with existing resources.

Officials from the **Department of Agriculture** indicated no known fiscal impact on their department.

Officials from the **Department of Economic Development** (DED) provided the following information:

The Division of Energy (DE) indicated this petition will result in increased operating expenses of $758,642 for fiscal year 2017, $827,781 for fiscal year 2018, and $835,826 for fiscal year 2019.

Summarize how this bill would affect the agency

Section 386.900 – Enhanced Net Metering and Easy Connection Act
The Division of Energy (DE) participates in PSC regulatory cases to evaluate issues from a formal state policy and planning perspective consistent with its interests in clean, affordable, abundant energy, and its efficient use. DE is active in cases before the PSC related to energy efficiency and renewable energy. As such, DE assumes it would be involved in the implementation of this provision that modifies the existing net metering and interconnection requirements for regulated electric utilities. It is assumed there would be a rulemaking docket to set the process and details associated with this proposal. Rulemaking cases before the PSC may be open for a year or more and include several full-day workshops. DE staff would participate in the workshops, monitor filings and review of other parties' proposals, research best practices and develop proposals and rule language, collaborate with other interested parties, and file comments. DE assumes it would monitor and participate in tariff and other related cases where enhanced net metering provisions are considered.

Section 386.910 – Community Solar Act
DE assumes it would be involved in the implementation of the Community Solar Act provisions. It is assumed there would be a rulemaking docket to set the process and details associated with this section. Rulemaking cases before the PSC may be open for a year or more and include several full-day workshops. DE staff would participate in the workshops, monitor filings and review of other parties' proposals, research best practices and develop proposals and rule language, collaborate with other interested parties, and file comments. DE assumes it would monitor and participate in tariff and other related

cases where community solar facilities are established for purposes of determination of eligibility and certification under the Missouri Renewable Energy Standard (RES). DE assumes this provision would result in additional RES certifications that would need to be performed.

Section 386.1000 – Clean Energy Tax Credit
DE is required to administer the Clean Energy Fund created by this section and promulgate rules to implement the Clean Energy Tax Credit. The proposal requires DE to receive applications and deposits, review and initially approve applications and required information within 30 days, review final approval applications, issue certificates and provide notifications, refund deposits for completed and disapproved projects, at least quarterly publish a list of the amount of tax credits initially and finally approved for each fiscal year and amounts reserved for future years, notify individual applicants of disapproved applications and approval within specified timeframes, notify applicants if the maximum amount of credits authorized have been allocated for the fiscal year, and grant three-month extensions if needed for project completion with additional deposit payments.

Long-range implications

Fiscal impacts associated with the Clean Energy Tax Credits could continue until June 30, 2022. The authorization for the tax credit would sunset sooner if the 1,000 megawatt limit is reached. Economic benefits associated with construction of solar facilities would also have long-range implications.

Assumptions and methodology used in arriving at state fiscal impact

Section 386.900 – Enhanced Net Metering and Easy Connection Act
For purposes of this fiscal note, DE assumes it would be involved in the PSC rulemaking and related cases to implement this provision but could do so with existing resources. However, there could be a cumulative fiscal impact to DE if multiple provisions related to PSC regulatory issues pass due to DE's involvement in such cases.

386.910-Community Solar Act
The RES requires investor-owned utilities in Missouri to either produce green power or purchase Renewable Energy Certificates (RECs) for compliance. One REC represents 1 megawatt-hour (MWh) of electricity generated from an eligible renewable energy resource. The in-state renewable energy generation can receive a multiplier of 1.25 for RES compliance purpose. DE has statutory authority to certify eligible renewable energy resources before RECs associated with those renewable energy resources can be used for RES compliance. DE does not charge any certification fees.

A community solar facility is defined as a solar photovoltaic facility with a capacity of 100-1000 kilowatts (kW) under this section. DE anticipates that enactment of a tax credit in Section 386.1000, RSMo, will result in an increase in community solar facilities constructed and that in-state community solar facilities will request DE to certify their

renewable energy resources/projects for the purpose of generating additional revenue from REC sales. DE's review primarily focuses on environmental impacts of renewable electric generation facilities on air, water or land use. The actual staff time spent on each application varies from one project to another. Solar photovoltaic facilities with a larger capacity typically require more staff time for reviewing their third-party environmental impact assessments in addition to verifying applicable environmental permits. Staff time will be also needed for data requests and discussion, data collection, database management, report production and website maintenance.

Current average staff time to review and certify renewable energy facilities ranges from 2 hours for small projects of a few hundred kW and 8-10 hours for larger projects of a few hundred kW to 1000 kW. It is assumed that small projects will account for two-thirds of the total community solar facilities and one-third will be larger projects. The weighted average of staff time (based on 2 hours for smaller projects and 8 hours for larger projects) is 4 hours (calculation: 2*{2/3}+8*{1/3)}). The number of projects at the assumed 200 kW ranges from 71 to 209 if the full amount of tax credits are used (Source: Mark Reading). By multiplying the average staff time of 4 hours, the annual staff time will range from 284 to 836 hours. For purposes of this fiscal note, DE assumes it could implement the provisions of this section with staff requested to implement the clean energy tax credit in Section 386.1000, RSMo (see below).

<u>Section 386.1000 – Clean Energy Tax Credit</u>
Retail sales of Missouri's utilities totaled $7.6 billion in 2014 (Source: Mark Reading; U.S. DOE/EIA). If all tax credits were used up to the cap of 1% of the annual statewide Missouri revenue of Missouri's retail electric suppliers (approximately $76 million/year), and with consideration to the estimated cost and size of the projects, it is estimated there would be 4,933 residential project applications and 283 commercial project applications submitted for tax credit reviews (Source: Mark Reading). DE assumes that it would take approximately 2 hours each to do the initial review/approval of each application and another 2 hours to do the review and issuance of a certification after a project is completed for residential projects. Each of these would include clerical time for input/issuing letters/filing, etc. For larger commercial projects, an estimated 8 hours is anticipated for each of these two steps. See response above for detailed tasks required by the proposal.

19,732 hours for residential applications
4,528 hours for commercial applications
24,260 hours total

To implement this provision, DE assumes it will need a total of 12 full-time employees (FTE) (including a portion of an FTE to implement Community Solar provisions, Section 386.910, RSMo) as follows:
8 – Energy Specialist I/II
2 – Energy Engineer II
2 – Administrative Office Support Assistant (AOSA)

- Energy Specialist I/II - Professional level staff to review the renewable energy project applications and to complete project evaluation activities.
- Energy Engineer II - Professional staff with expertise in engineering aspects of renewable energy projects to review the technical aspects of the projects, review of projects related to the Renewable Energy Standard and Renewable Energy Certificates and familiar with environmental impacts of renewable electric generation.
- AOSA - Staff to assist with the administrative requirements of the reviews such as drafting and sending communication to applicants, maintaining the database of applicants, and tracking status of applications.

DE also assumes that the DED's existing tax credit database will be used to track the applications. Some IT costs to generate the necessary reports are estimated.

Note that although an application deposit is required to be paid to DE and deposited in the Clean Energy Fund, because the deposit must be refunded to the applicant upon completion of the project or if the project is disapproved, DE assumes it is unable to use these funds to administer the proposal. Therefore, General Revenue funds are requested. Based on the estimated number of residential and commercial projects, application deposits at 2 cents/watt to the Clean Energy Fund would total approximately $1.7 million/year.

Officials from the **Department of Higher Education** indicated this initiative petition would not have a fiscal impact on their department.

Officials from the **Department of Health and Senior Services** indicated no fiscal impact on their department.

Officials from the **Department of Insurance, Financial Institutions and Professional Registration** indicated this petition, if passed, will have no cost or savings to their department.

Officials from the **Department of Mental Health** indicated this proposal creates no direct obligations or requirements to their department that would result in a fiscal impact.

Officials from the **Department of Natural Resources** indicated the responsibilities of this proposal appear to fall under the Division of Energy. With Executive Order 13-03 the Division of Energy was transferred from the Missouri Department of Natural Resources to the Missouri Department of Economic Development, by Type I transfer. Therefore, they would not anticipate a direct fiscal impact from this proposal.

Officials from the **Department of Corrections** indicated no impact.

Officials from the **Department of Labor and Industrial Relations** indicated no fiscal impact on their department.

Officials from the **Department of Revenue** estimate this petition will result in increased operating expenses of $243,282 for fiscal year 2017, $181,985 for fiscal year 2018, and $183,470 for fiscal year 2019.

The legislation creates an unknown, negative impact to total state revenue by creating a new tax credit.

Section 386.1000
The provisions of this section authorize the issuance of a clean energy tax credit to taxpayers incurring costs for the installation of a clean energy resource project. The taxpayer may claim 35 percent of the total cost of the project. The legislation caps the amount of tax credits at not more than one percent of the value of the electricity used in Missouri.

Section 386.1000.13
The department suggests changing the provisions pertaining to the transfer of the tax to the Department of Revenue as this is currently the department's responsibility based on a previously issued executive order.

Administrative Impact:
Personal Tax:
Personal Tax requires one (1) Revenue Processing Technician I (Range 10, Step L) for every 6,000 credits claimed.

Corporate Tax:
Corporate Tax requires three (3) Revenue Processing Technicians I (Range 10, Step L) for every 4,000 credits redeemed, 4,000 credits transferred, and for every 520 SB 1099 compliance mailings and correspondence.

Integrated Tax System:
The integrated tax system incurs additional costs of $43,680 to implement the provisions of this petition.

Officials from the **Department of Public Safety** indicated they see no fiscal impact due to this initiative petition.

Officials from the **Department of Social Services** indicated no fiscal impact on their department.

Officials from the **Governor's office** indicated there should be no fiscal impact to their office.

Officials from the **Missouri House of Representatives** indicated no fiscal impact to their office.

Officials from the **Department of Conservation** indicated that no adverse fiscal impact to their department would be expected as a result of this initiative petition.

Officials from the **Office of Administration** indicated this proposal will have no fiscal impact to their office.

Officials from the **Office of State Courts Administrator** indicated there is no fiscal impact on the courts.

Officials from the **Missouri Senate** indicated no fiscal impact on their office.

Officials from the **Secretary of State's office** indicated their office is required to pay for publishing in local newspapers the full text of each statewide ballot measure as directed by Article XII, Section 2(b) of the Missouri Constitution and Section 116.230-116.290, RSMo. Their office is provided with core funding to handle a certain amount of normal activity resulting from each year's legislative session. Funding for this item is adjusted each year depending upon the election cycle with $1.3 million historically appropriated in odd numbered fiscal years and $100,000 appropriated in even numbered fiscal years to meet these requirements. Through FY (fiscal year) 2013, the appropriation had historically been an estimated appropriation because the final cost is dependent upon the number of ballot measures approved by the General Assembly and the initiative petitions certified for the ballot. In FY 2013, at the August and November elections, there were 5 statewide Constitutional Amendments or ballot propositions that cost $2.17 million to publish (an average of $434,000 per issue). In FY 2015, the General Assembly changed the appropriation so that it was no longer an estimated appropriation and their office was appropriated $1.19 million to publish the full text of the measures. Due to this reduced funding, their office reduced the scope of the publication of these measures. In FY 2015, at the August and November elections, there were 9 statewide Constitutional Amendments or ballot propositions that cost $1.1 million to publish (an average of $122,000 per issue). Despite the FY 2015 reduction, their office will continue to assume, for the purposes of this fiscal note, that it should have the full appropriation authority it needs to meet the publishing requirements. Because these requirements are mandatory, they reserve the right to request funding to meet the cost of their publishing requirements if the Governor and the General Assembly again change the amount or continue to not designate it as an estimated appropriation.

Officials from the **Office of the State Public Defender** indicated this initiative petition will not have any impact on their office.

Officials from **Greene County** indicated there are no estimated costs or savings to report from their county for this initiative petition.

Officials from the **City of Kansas City** indicated no fiscal impact is anticipated if this proposal is adopted.

Officials from the **City of West Plains** indicated the 86 cities with municipal electric utilities depend on the revenues of this service for their citizen/owners to off-set the cost of electric service and operation to citizens as well as to support the activities of city government.

Based primarily on data from the Federal Department of Energy's (DOE) Energy Information Administration (EIA) Table 6 plus additional data gleaned from the National Renewable Energy Lab's Photovoltaic Calculator and the Missouri Association of Municipal Utilities for peak loads in 73 cities, they have determined that municipalities in Missouri face a loss of at least $23.9 million in revenue should this initiative petition become law. The impact alone to the City of West Plains appears to be $352,000 annually, or over 6.5% of their annual electric utility revenue budget. This figure does not reflect any additional costs they will be required to incur for required pleadings before the state Public Service Commission or local compliance costs for other requirements contained in this proposal.

Because the State Constitution prohibits the imposition of any mandate on local governments (Mo. Const. Art. X, Sec. 16) that reduces income or increases costs without "full state financing," they anticipate that local government costs would be reflected in the final state cost when the fiscal note is completed. Necessary litigation costs incurred for Mo. Const. Art. X, Sec. 16 and other potential legal inconsistencies are unknown.

Methodology for City Loss Calculation
Renewable Energy Initiative Petitions

Assumptions and Methods	**Information Source**
1. A combined federal and state tax credit of 60% of installation costs, would prompt city customers to achieve the 7% capacity cap in a reasonable period of time	Proposed Legislation
2. 1 kW solar panel at this latitude would generate 1350 kWHr per year	National Renewable Energy Lab's PV Calculator
3. Annual Peaks	Municipal reports to the Missouri Association of Municipal Utilities
4. Current City Electric Rates	DOE EIA Database (Table 6 for 2010)

5. Calculation:
   Annual Peak
   7% of Annual Peak for Capacity Cap
   Total Solar Generation = (Capacity Cap * 1350 kWHrs)*1000
   City's lost revenue: City rate * Solar Generation

6. State calculation based on the sum of "Assumption 5" calculations for
   73 reporting cities (out of 86)
      Total ≥ $23.8 million

Calculation for City of West Plains

44.453	Annual Peak (MW)
3.11171	7% of Annual Peak for Capacity Cap MW
4,200,809	Total Solar Generation (KWHR)
8.38	City Rate (cents per kWHR)
$352,028	Lost Revenue

Officials from **University of Missouri** indicated they have not seen cost impact studies on this initiative from their electric utility suppliers, but they do not believe this will have a significant impact on their university.

Officials from the **Public Service Commission** (PSC) indicated without the benefit of the rulemaking process to explore potential issues and clearly delineate parameters, and assuming the "value of electricity" is clearly defined as the **calendar** year Missouri revenue for retail sales of electricity, the first year clean energy tax credit cap would be approximately $76,444,000 based on the most recent data currently available. For subsequent years, this amount will change based on the most recent Missouri revenue for retail sales of electricity and whether any tax credits exceed the total tax liability for a given fiscal year. In that case, the amount that exceeds the tax liability may be carried back 3 years or forward 10 years, involving additional calculations.

Sections 386.890 and 386.900, RSMo, define "department" as the department of natural resources. "Department" should be defined as the department of economic development, division of energy.

Sections 386.890 and 386.900, RSMo, both use the terms "Retail electric supplier" or "supplier", but in Section 386.890, RSMo, a "retail electric supplier" or "supplier" is any rural electric cooperative under Chapter 394, RSMo, that provides retail electric service in this state, and in Section 386.900, RSMo, a "retail electric supplier" or "supplier" is any municipal utility or electrical corporation regulated under this chapter that provides retail electric service in this state. Although the terms are in different statutes, it may be confusing to define the same term in a different manner. It may be clearer to use different terms applicable to the respective intent. Further since Section 386.890, RSMo, is only applicable to rural electric cooperatives, it may make sense to move the entire provision to Chapter 394, RSMo.

Sections 386.890 and 386.900, RSMo, use the term "wholesale generator". The PSC respectfully suggests this term be defined.

Section 386.900, RSMo, uses terms such as "commission-regulated supplier" and "public utilities" to describe suppliers that are subject to PSC jurisdiction. The PSC respectfully suggests the terms be used consistently.

Section 386.900. RSMo, requires the PSC to promulgate rules by June 1, 2017, and Section 386.910, RSMo, requires the PSC to adopt rules by August 1, 2017. The PSC respectfully suggests these dates may be aggressive for final rules to be effective.

Section 386.900.6.(2), RSMo, references "subsection 4 of this section". This appears to be an inaccurate cross-reference as there is no subsection 4 of the section.

Section 386.900.12, RSMo, says the estimated generating capacity of all net metering systems shall count towards the respective retail electric supplier's accomplishment of any renewable energy portfolio target or mandate, but the renewable energy portfolio deals with "energy" not "capacity".

Section 386.910.5, RSMo, states that when a community solar facility is placed in service, it shall have the option to lock in the current value-of-community-solar rate for a period of twenty years. It appears this provision would require the utility ratepayers to fund the facility at the current rate for 20 years without adjustment for changes in the utility's costs or revenues that would occur over the 20 year period. It is also not clear if the cost-of-solar value contemplates an earnings opportunity for the Commission-regulated utility.

Section 386.1000, RSMo, discusses a "clean energy tax credit". It is not clear why the tax credit is in the PSC statute and not in a tax-related statute.

Mark R. Reading provided the following information as a proponent of this initiative petition.

Submitted by:

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Mark R. Reading
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(573) 694-6828
Primary Contact Person

Clean Energy Independence and Investment Act of 2016 - Versions 10, 12, 14, 16, and 18
Sec. of State # 173, 175, 177, 190, and 180

Proposed Statement of Fiscal Impact
for Clean Energy Independence and Investment Act of 2016 - Versions 10, 12, 14, 16, and 18
Sec. of State # 173, 175, 177, 190, and 180

Fiscal Impact Information Submitted Pursuant to Section 23.140.2

The amendment's estimated impact decreases state revenue between $31 to $63 million depending upon the speed of up to $225 million in additional clean energy project construction and implementation by the Department of Economic Development, residential homeowners, and businesses. Local revenue is estimated to grow between $2.6 to $5.1 million.

ESTIMATED NET EFFECT ON STATE FUNDS		
Fund Affected	**FY 2017**	**FY 2018**
General Revenue	$0	From ($33,037,828) to ($66,019,325)
Total Estimated Net Effect on All State Funds	$0	From ($31,362,880) to ($62,666,273)
ESTIMATED NET EFFECT ON LOCAL FUNDS		
Local Funds	$0	From $2,553,188 to $5,128,651
Total Estimated Net Effect on All Local Funds	$0	From $2,553,188 to $5,128,651

SUMMARY OF VERSIONS OF CLEAN ENERGY INDEPENDENCE AND INVESTMENT ACT

Nine versions of the Clean Energy Independence and Investment Act of 2016 have been submitted for review. A summary of which topics are in each version is provided below.

CLEAN ENERGY INDEPENDENCE AND INVESTMENT ACT OF 2016
SUMMARY OF VERSIONS

Petition version	386.870 - Electric vehicle	386.890 - Net metering	386.900 - Enhanced net metering	386.910 - Community Solar	386.1000 - Tax credits
1% Electric Versions					
Version 10	N/A	X	X	X	X
Version 12	X	X	X	X	X
Version 14	X	Deletes	X	X	X
Version 15	N/A	N/A	N/A	N/A	X
Version 16	X	N/A	N/A	X	X
Version 17	X	X	X	N/A	X
Version 18	N/A	X	X	X	X
$50 million cap Versions					
Version 11	N/A	X	X	N/A	X
Version 13	X	X	X	X	X

ANALYSIS OF FISCAL IMPACT OF CLEAN ENERGY INDEPENDENCE AND INVESTMENT ACT

The fiscal impact analysis contained herein focuses on estimating the fee and tax revenue resulting from the statutory changes proposed in the initiative petition. Table 1 summarizes the revenue estimated by source and by fiscal year. Page and Table numbers are provided to help readers find specific subjects.

Table 1 -
Summary of Fiscal Impact by Fund

Page #	Table #	Purpose	FY 2017	FY 2018 - low range	FY 2018 - high range	Revenue Type
9-12	Table 10	Tax credit	$0	($39,494,829)	($78,989,658)	Income
13-15	Table 14	Taxes from clean energy tax credit construction	$0	$4,429,063	$8,858,126	Various
16-17	Table 17	Taxes from community solar construction	$0	$2,027,938	$4,112,207	Various
		subtotal General Revenue Fund	$0	($33,037,828)	($66,019,325)	
8-13	Table 11	Clean Energy Fund	$0	$868,852	$1,733,826	Application deposit
13-15	Table 14	Prop C sales tax - clean energy	$0	$451,369	$902,739	Sales tax
16-18	Table 17	Prop C sales tax - community solar	$0	$206,669	$419,078	Sales tax
		subtotal Prop C	$0	$658,038	$1,321,817	
13-15	Table 14	Conservation sales tax - clean energy	$0	$56,421	$112,842	Sales tax
16-18	Table 17	Conservation sales tax - community solar	$0	$25,834	$52,385	Sales tax
		subtotal Conservation	$0	$82,255	$165,227	
13-15	Table 14	Parks and Soils sales tax - clean energy	$0	$45,137	$90,274	Sales tax
16-18	Table 17	Parks and Soils sales tax - community solar	$0	$20,667	$41,908	Sales tax
		subtotal Parks and Soils	$0	$65,804	$132,182	
		subtotal Other State Funds	$0	$1,674,949	$3,353,052	
		subtotal all state funds	$0	($31,362,880)	($62,666,273)	
13-15	Table 14	Local Sales Tax - clean energy	$0	$1,751,314	$3,502,627	Sales tax
16-18	Table 17	Local Sales Tax - community solar	$0	$801,875	$1,626,024	Sales tax
		subtotal Local Funds	$0	$2,553,188	$5,128,651	
		Grand Total State and Local	$0	($28,809,691)	($57,537,622)	

Clean Energy tax credits

The proposal creates a clean energy tax credit in Chapter 386 RSMo. The annual level of tax credits for each calendar year shall not exceed one percent of the annual statewide Missouri revenue of Missouri retail electric suppliers. The Public Service Commission (PSC) is required to determine the revenue for retail electric suppliers using available reports, including FERC Form Number 1 as allowed by 18 CFR § 141 or an equivalent determined by the PSC.

The data for this calculation is gathered and published by the U.S. Energy Information Administration on its website.[1] Table 2 shows the revenues reported by each Missouri entity in 2014. Retail sales totaled $7.6 billion in 2014 for the 74 entities.

Table 2
2014 Utility Bundled Retail Sales - Total
(Data from forms EIA-861- schedules 4A & 4D and EIA-861S)

Entity	Ownership	Revenues (Thousands Dollars)
Atchison-Holt Electric Coop	Cooperative	$6,727
Barry Electric Coop	Cooperative	$16,654
Barton County Elec Coop, Inc	Cooperative	$16,262
Black River Electric Coop - (MO)	Cooperative	$42,554
Boone Electric Coop	Cooperative	$55,335
Callaway Electric Cooperative	Cooperative	$24,618
Carroll Electric Coop Corp - (AR)	Cooperative	$14,104
Central Missouri Elec Coop Inc	Cooperative	$25,350
Chillicothe Municipal Utils	Municipal	$10,035
Citizens Electric Corporation - (MO)	Cooperative	$123,087
City Utilities of Springfield - (MO)	Municipal	$249,286
City of Ava - (MO)	Municipal	$2,894
City of Cameron	Municipal	$7,728
City of Carthage - (MO)	Municipal	$24,493
City of Columbia - (MO)	Municipal	$109,927
City of Farmington - (MO)	Municipal	$18,390
City of Fulton - (MO)	Municipal	$14,228
City of Hannibal - (MO)	Municipal	$25,785
City of Harrisonville - (MO)	Municipal	$12,072
City of Independence - (MO)	Municipal	$135,338
City of Jackson - (MO)	Municipal	$16,281
City of Kennett - (MO)	Municipal	$10,988
City of Kirkwood - (MO)	Municipal	$21,547
City of Lamar - (MO)	Municipal	$6,961
City of Lebanon - (MO)	Municipal	$22,949
City of Macon - (MO)	Municipal	$9,740
City of Marshall - (MO)	Municipal	$17,390
City of Monett - (MO)	Municipal	$20,534
City of Mount Vernon - (MO)	Municipal	$6,790
City of Nixa - (MO)	Municipal	$14,132
City of Poplar Bluff - (MO)	Municipal	$31,686
City of Rolla - (MO)	Municipal	$27,694
City of Sikeston - (MO)	Municipal	$17,528

City of Sullivan - (MO)	Municipal	$9,645
City of West Plains - (MO)	Municipal	$15,208
Clay County Electric Coop Corp	Cooperative	$96
Co-Mo Electric Coop Inc	Cooperative	$46,302
Consolidated Electric Coop	Cooperative	$21,936
Crawford Electric Coop, Inc	Cooperative	$30,705
Cuivre River Electric Coop Inc	Cooperative	$105,621
Empire District Electric Co	Investor Owned	$456,324
Farmers Electric Coop, Inc - (MO)	Cooperative	$28,697
Gascosage Electric Coop	Cooperative	$17,074
Grundy Electric Coop, Inc	Cooperative	$12,214
Howard Electric Coop	Cooperative	$6,057
Howell-Oregon Elec Coop, Inc	Cooperative	$38,226
Intercounty Electric Coop Assn	Cooperative	$53,855
KCP&L Greater Missouri Operations Co.	Investor Owned	$802,845
Kansas City Power & Light Co	Investor Owned	$824,706
Laclede Electric Coop, Inc	Cooperative	$63,330
Lewis County Rural E C A	Cooperative	$13,534
Macon Electric Coop	Cooperative	$23,795
Missouri Rural Electric Coop	Cooperative	$17,812
New-Mac Electric Coop, Inc	Cooperative	$38,876
North Central MO Elec Coop Inc	Cooperative	$14,098
Osage Valley Elec Coop Assn	Cooperative	$28,034
Ozark Border Electric Coop	Cooperative	$68,293
Ozark Electric Coop Inc - (MO)	Cooperative	$52,354
Pemiscot-Dunklin Elec Coop Inc	Cooperative	$19,856
Platte-Clay Electric Coop, Inc	Cooperative	$51,737
Ralls County Electric Coop	Cooperative	$12,711
SE-MA-NO Electric Coop	Cooperative	$9,438
SEMO Electric Cooperative	Cooperative	$33,195
Sac-Osage Electric Coop Inc	Cooperative	$16,676
Southwest Electric Coop, Inc	Cooperative	$58,853
Sunnova	Behind the Meter	$1
Three Rivers Electric Coop	Cooperative	$36,751
Trenton Municipal Utilities - (MO)	Municipal	$8,647
Tri-County Electric Coop Assn	Cooperative	$12,512
Union Electric Co - (MO)	Investor Owned	$3,112,534
United Electric Coop, Inc - (MO)	Cooperative	$21,579
Webster Electric Coop	Cooperative	$28,828
West Central Electric Coop Inc - (MO)	Cooperative	$25,967
White River Valley El Coop Inc	Cooperative	$86,488
Adjustment 2014	Other	$159,914
Total		$7,644,407

Source: http://www.eia.gov/electricity/sales_revenue_price/

Table 10: All Sectors - Class of ownership, number of consumers, sales, revenue, and average retail price by State and utility:

Table 3 shows the data series by year from 1990 through 2014 reported by the U.S. Energy Information Administration.[2] The average annual increase in these revenues is 3.33 percent.

Table 3
Revenue from Sales to Ultimate Customers
(Thousand Dollars) for Missouri, 1990-2014

Year	Total Revenue	$ Growth over previous year	% Growth over previous year
1990	$3,484,572,000		
1991	$3,653,391,000	$1,688,190	4.8%
1992	$3,489,099,000	($1,642,920)	(4.5%)
1993	$3,709,661,000	$2,205,620	6.3%
1994	$3,749,115,000	$394,540	1.1%
1995	$3,891,751,000	$1,426,360	3.8%
1996	$3,961,895,000	$701,440	1.8%
1997	$4,005,066,000	$431,710	1.1%
1998	$4,196,674,000	$1,916,080	4.8%
1999	$4,185,713,000	($109,610)	(0.3%)
2000	$4,370,246,000	$1,845,330	4.4%
2001	$4,414,434,000	$441,880	1.0%
2002	$4,565,227,000	$1,507,930	3.4%
2003	$4,470,188,000	($950,390)	(2.1%)
2004	$4,494,108,000	$239,200	0.5%
2005	$4,959,849,000	$4,657,410	10.4%
2006	$5,169,747,000	$2,098,980	4.2%
2007	$5,614,317,000	$4,445,700	8.6%
2008	$5,768,459,000	$1,541,420	2.7%
2009	$5,871,973,000	$1,035,140	1.8%
2010	$6,698,608,000	$8,266,350	14.1%
2011	$7,008,476,000	$3,098,680	4.6%
2012	$7,029,475,000	$209,990	0.3%
2013	$7,538,092,000	$5,086,170	7.2%
2014	$7,644,407,000	$1,063,150	1.4%
		Avg. annual growth	3.33%

Source: http://www.eia.gov/electricity/sales_revenue_price/
Supplemental Data: 1990 - 2013 Revenue from Retail Sales of Electricity by State by Sector by Provider (EIA-861)

For purposes of this fiscal analysis it is assumed that the Public Service Commission will use the most recent available data for establishing the annual cap. The state is currently in FY 2016 and the most recent available data is from 2014. Thus, for the fiscal periods included for consideration by the State Auditor's Office the FY 2017 cap will be established using 2015 data published by the U.S. Energy Information Administration. Similarly, the FY 2018 cap will be established using 2016 data. In this manner the cap for each calendar year will be established eight months before it begins instead of four months after it starts.

Table 4
Data and Timeline for Establishing Annual Tax Credit Cap

Data available	Time period of data	CY year for the cap
April 2015	2014 actual data	CY 2016
April 2016	2015 actual data	CY 2017
April 2017	2016 actual data	CY 2018

As shown in Table 3 the average annual growth rate from 1990 to 2014 was 3.33 percent. Table 5 assumes that the average annual growth rate will carry forward for the next several years. The clean energy tax credits cap is estimated at $76.4 million for CY 2016, $79 million for CY 2017 and $81.6 million for CY 2018.

Table 5
Clean Energy Tax Credit Estimate of Cap

Calendar Year for cap	Fiscal Year for likely redemption of credits	Revenue data	Total Revenue	Tax credit at 1.0%
CY 2016	FY 2017	2014 actual data	$7,644,407,000	$76,444,070
CY 2017	FY 2018	2015 projection	$7,898,965,753	$78,989,658
CY 2018	FY 2019	2016 projection	$8,162,001,313	$81,620,013

For purposes of the fiscal note the State Auditor's office asks that estimates be provided for the first two fiscal years of implementation which are FY 2017 and FY 2018 since the provisions of the proposal would go into effect in December 2016. Almost all taxpayers file their taxes on the April 15th deadline. Therefore, CY 2016 taxes would be due on April 15, 2017 which is in FY 2017 as shown in Table 5.

The proposal establishes a cap beginning for CY 2016. However, the provisions of the act will go into effect in December 2016. Paragraph 13 of the proposed section 386.1000 states that any taxpayer verified by the Department of Economic Development to have commenced a clean energy resource project in calendar year 2016 and otherwise complied with the provisions shall be deemed eligible for the tax credit. This allows for the Department of Economic Development to include projects in 2016 before its processes are in place. Paragraph 17 of the proposed section 386.1000 provides that the Department of Economic Development shall issue rules necessary to administer the act. In addition, paragraph 10 gives the Department of Economic Development 45 days to notify an applicant of approval after the application is submitted.

Issuing rules is at best a months long process. The 45 day processing time allowed for any completed application filed after the rules are adopted makes it very unlikely that the Department of Economic Development will issue any CY 2016 tax credits before April 15, 2017 that would affect the taxpayers initial tax filing and reduce taxes paid during FY 2017. Tax credits issued between April 15 and June 30, 2017 would require an amended filing which also would be unlikely to be completed by June 30, 2017. Thus, this fiscal analysis assumes a de minimis or no impact on FY 2017 general revenue tax collections. Any CY 2016 tax credit impact would at most impact the FY 2018 tax collections through amended returns or through CY 2017 taxes.

Application Deposit revenue

The proposed Section 386.1000 RSMo requires that taxpayers submit an application to the Department of Economic Development to receive approval for tax credits (paragraph 7). Each application must include a two cent per watt application deposit. The total revenue from application deposits is dependent upon:

- the number of projects that will be submitted;
- the number of watts generated from all of those projects

Each of these is affected by the:

- percentage of residential v commercial projects
- number of kW generated by residential v commercial projects
- cost of residential and commercial projects
- total construction completed
- any phase-in period as the Department of Economic Development institutes rules and prepares the program
- any phase-in period as the solar industry and residential and commercial customers begin to take advantage of the new tax credits that are available

All of these factors must be estimated and evaluated in order to calculate the amount of application deposit revenue that will be received by the Department of Economic Development.

Tax credits are available to both residential and commercial projects. Paragraph 5 of the proposed Section 386.1000 RSMo provides that no electrical corporation as defined under section 386.020 shall own or control a clean energy resource project that receives a state tax credit.

The Missouri Department of Economic Development, Division of Energy published a Missouri Comprehensive State Energy Plan in October 2015. The report states that half of the installed net-metered PV solar is residential and the other half commercial customers.[3] However, the report also indicates that there are challenges that face residential customers making it more difficult and expensive to install solar projects. These challenges include local ordinances or homeowner's association rules the may prohibit installation or require design changes that decrease efficiency or add to the cost.[4] In addition, over the past decade an industry has developed to assist with the financing of solar projects. Such financing alternatives are easier to obtain by commercial projects because of their size, scope, and estimated return on investment.[5] Commercial projects can have a longer-term outlook than homeowners who may not know how long they may live in their current house. The Missouri State Energy Plan indicates that residential rooftop solar is a relatively expensive energy option due to these and other factors.[6]

For all of the reasons identified in the preceding paragraph, for purposes of this fiscal analysis residential solar installation is assumed to be 40% of the total solar construction. Commercial solar installation is assumed to be 60% of the total solar construction. This fiscal analysis has already indicated that 2016 solar construction will likely not be affected by the approval of the petition by voters in November 2016. Thus, CY 2017 is the first full year of impact. Tax credits resulting from such construction will first affect state revenues in FY 2018 which is the second year covered in fiscal notes issued by the State Auditor's Office.

The next factor to consider is the number of kW generated by residential and commercial projects. A recent report on photovoltaic system pricing trends published by the U.S. Department of Energy indicates that the median residential project is 6.1 kW while the modeled commercial system is 200 kW. Paragraph 5 of the proposed section 386.1000 establishes a 200 kW limit on installations that are authorized for tax credits.[7] For purposes of this fiscal analysis it is assumed that all commercial projects will be at the 200 kW size and that residential projects will be 6.1 kW. Paragraph 7 of the proposed section 386.1000 requires a two cent per watt application deposit fee. Table 6 shows that there would be a $122

application deposit required for the median residential project. There would be a $4,000 application deposit required for the 200 kW commercial project.

Table 6
Application Deposit Required for Projects

Construction type	Project size in kW	Project size in watts	Application deposit for project at 2 cents per watt
Residential	6.1	6,100	$122
Commercial	200.0	200,000	$4,000

The recent report on photovoltaic system pricing trends published by the U.S. Department of Energy also discusses the historical, recent, and near-term pricing of solar projects.[8] Project cost information was obtained on more than 400,000 systems in 42 states. The modeled system prices identified in the report showed a Q1 2015 residential system price of $3.12/watt and a commercial 200 kW system cost of $2.17/watt. These were reductions in price of from Q4 2013 of 7% and 19% respectively. The report also indicates that prices for residential and commercial PV systems have decreased by 6-12% per year, on average, from 1998-2014. In addition, the report indicates that analysts project the system prices will fall 16-33% for residential systems between 2014-2020.

Table 7 projects residential solar project costs. Projections are made to CY 2017 since it is the first full year of impact and such construction will affect state revenues in FY 2018 which is the second year covered in fiscal notes issued by the State Auditor's Office. Table 7 assumes the low end of falling prices indentified in the U.S Department of Energy report - 16% from 2014-2020 or about 2.6% per year. This fiscal analysis will assume a cost of $3,000/kW for residential solar projects which is the average of the CY 2016 and CY 2017 projected costs. The cost for a 6.1 kW residential project is estimated at $18,300.

Table 7
Residential Solar Project Estimate

	Cost of Residential project per kW	Cost of Residential project at 6.1 kW project size
CY 2015	$3,120	$19,032
CY 2016	$3,039	$18,538
CY 2017	$2,960	$18,056
average cost of CY16 and CY17 estimates	$3,000	$18,300

The modeled commercial system price identified in the report showed a Q1 2015 commercial 200 kW system cost of $2.17/watt. However, the national average cost of commercial projects is affected by states with more mature solar markets and industries and large companies, like Wal-Mart and Ikea, that have moved to install significant solar projects on their facilities. The first Missouri commercial systems are less likely to meet the $2.17/watt cost projections. Table 8 uses other data in the report to amend the estimate of commercial solar project costs. The report shows that the price of the modeled 200 kW commercial system has fallen from $2.68/watt to $2.17 between 2013 Q4 and 2015 Q1. The mid-point of that decrease is $2.425/watt. Further, it is assumed that the cost of Missouri projects will be higher by 2.6%, or one-year's worth of the low end of the price declines found in the report. The result is that this analysis will assume that the Missouri 2015 Q1 price is $2.488/watt.

Table 8
Commercial Solar Project Cost Estimate per kW

2013 Q4	$2,680
2015 Q5	$2,170
Mid-point	$2,425
One-year behind (2.6%)	$2,488

Table 9 then projects the $2,488/kW 2015 Q1 cost to CY 2017 since it is the first full year of impact and such construction will affect state revenues in FY 2018 which is the second year covered in fiscal notes issued by the State Auditor's Office. Table 9 assumes the low end of falling prices indentified in the U.S Department of Energy report - 16% from 2014-2020 or about 2.6% per year. This fiscal analysis will assume a cost of $2,392/kW for commercial solar projects which is the average of the CY 2016 and CY 2017 projected costs. The cost for a 200 kW commercial project is estimated at $478,400.

Table 9
Commercial Solar Project Estimate

	Cost of Commercial project per kW	Cost of Commercial project at 200 kW project size
CY 2015	$2,488	$497,600
CY 2016	$2,423	$484,600
CY 2017	$2,360	$472,000
average cost of CY16 and CY17 estimates	$2,392	$478,400

The analysis so far has identified:

- a $79 million estimate of the maximum clean energy tax credits using one percent of the annual statewide Missouri revenue of Missouri retail electric suppliers as directed by paragraph 1 of the proposed section 386.1000.
- an estimate that 40% of total solar construction would be residential and 60% commercial
- project cost estimates of $18,300 for 6.1 kW residential projects and $478,400 for 200 kW commercial projects

The final factor to calculate before arriving at the amount of application deposit revenue is any phase-in period as the Department of Economic Development issues rules and prepares its processes and the solar industry and residential and commercial customers begin to take advantage of the new tax credits that are available. The Missouri State Energy plan reports that Missouri currently has 111 MW of installed solar PV capacity. The plan also reports that there is 42.8 MW of installed net-metered PV solar developed over the years largely as a result of rebates from large utility companies in Missouri.

The proposal being analyzed establishes a statutory program of clean energy tax credits that will sunset after the Department of Economic Development certifies that 1,000 MW of capacity has been added as a result of the tax credits but no later than June 30, 2022. The 1,000 MW target represents a dramatic increase in current capacity.

The Missouri State Energy plan provides a wealth of information about the current state of "green jobs" and the solar industry in Missouri. The report includes the following along with other findings about the industry.

- Missouri had over 100,000 "green jobs" according to a 2009 study.[9]
- Missouri was identified as 10th in the nation for growth in clean energy and clean transportation jobs in 2013.[10]

- $187 million was invested by Missouri's solar industry in 2014 to install solar photovoltaic systems for residential, commercial, and utility use.[11]
- There are more than 97 solar companies at work throughout the supply chain in Missouri, employing 2,500 people including manufacturers, contractors, installers, project developers, distributors.[12]
- Missouri could create 8,500 new jobs to design, install, and operate energy efficiency measures by 2025 according to a 2011 study.[13]
- In 2010 Missouri ranked 6th in the nation in photovoltaic jobs.[14]

The clean energy tax credit does not sunset until the 1,000 MW target of additional capacity is met but no later than June 30, 2022. The size and the long-term nature of the 1,000 MW target should encourage the development of the Missouri solar industry even after it sunsets. It should also result in long-term planning and the build out of a native Missouri solar industry. The target also provides an incentive for the industry to meet the growth potential described in the Missouri State Energy Plan.

In the long-term the impact of the 1,000 MW target will grow and build the industry. In addition, investment in solar will allow longer term benefits in reduced fuel usage, cleaner air, better health and the resulting lower costs among other things. The Missouri State Energy Plan identifies the public health impacts of various energy sources with clean energy sources providing significant positive benefits over other sources.[15] A 2013 study of Hawaii's solar tax credit program found that the State recovered the full cost of the tax credit in 9 to 11 years - a rate of return on its investment ranging from 8.9% to 10.3%.[16] In addition, the study found that for each dollar spent by Hawaii on tax credits the amount of additional sales stimulated was $34.69 for residential solar PV and $55.03 for commercial PV.

However, the fiscal note format required for initiative petitions focuses on the short-term revenue and costs. Thus, the longer-term benefits are not included in this fiscal analysis. As explained elsewhere in this fiscal analysis the impact of the availability of tax credits is somewhat dependent upon the speed with which the Department of Economic Development issues the necessary rules and regulations, develops and makes available the application forms, and the industry's reaction to voter approval and the department's actions. Thus, two alternatives are calculated to create a possible range for the likely outcome in the short-term.

The first alternative assumes that construction will be sufficient to use half of the $79 million in possible tax credits. The first alternative assumes that the program is not implemented until July 2017 thus reducing its effect by half in CY 2017. The second alternative assumes that construction will be sufficient to use all of the $79 million in possible tax credits. The second alternative assumes that the industry is energized by the tax credit and pushes forward with construction under the assumption that the Department of Economic Development will recognize all projects that have been started after voter approval of the proposal.

Table 10 takes that information and shows two possible alternatives for CY 2017.

- <u>Construction leading to use of **half** the available tax credits ($39.5 million)</u> - A total of $112.8 million in construction would be required to generate $39.5 million in tax credits. Residential construction of $45.1 million (assuming 40% of construction) would result in $15.8 million in tax credits. Commercial construction of $67.7 million (assuming 60% share of construction) would result in $23.7 million in tax credits.

- <u>Construction leading to use of **all** the available tax credits ($79 million)</u> - **A total of $225.7 million in construction would be required to generate $79 million in tax credits**. Residential construction of $90.3 million (assuming 40% of construction) would result in $31.6 million in tax credits. Commercial construction of $135.4 million (assuming 60% share of construction) would result in $47.4 million in tax credits.

In addition, using the average cost and size of projects it is possible to compute the number of residential and commercial projects that will be constructed. A total of 2,608 projects would be constructed with half

the tax credits (2,466 residential, 142 commercial). A total of 5,216 projects would be constructed with all the tax credits (4,933 residential, 283 commercial).

Table 10
Number of Projects using Half or All of Tax Credit Cap

	CY 2017 construction needed for half of tax credits to be used in FY 2018	CY 2017 construction needed for all of tax credits to be used in FY 2018
Tax credits estimate from CY 2017 construction	$39,494,829	$78,989,658
Amount of construction value needed to generate value of 35% tax credits	$112,842,369	$225,684,737
% of residential per year of credits issued	40.0%	40.0%
% of commercial per year of credits issued	60.0%	60.0%
Tax credits by type of construction		
Residential	$15,797,932	$31,595,863
Commercial	$23,696,897	$47,393,795
Total amount by type	$39,494,829	$78,989,658
Construction value by type of construction		
Residential	$45,136,948	$90,273,895
Commercial	$67,705,421	$135,410,842
Total amount by type	$112,842,369	$225,684,737
Cost of solar projects per project		
Residential (6.1 kW/project)	$18,300	$18,300
Commercial (200 kW/project)	$478,400	$478,400
# of projects		
Residential	2,466	4,933
Commercial	142	283
Total amount by type	2,608	5,216

Table 10 shows a significant number of projects that would be completed throughout the state as a result of the clean energy tax credit. These numbers are possible for a variety of reasons identified in the Missouri State Energy Plan.

- Missouri households use about 12% more than the average U.S. household, thus projects would put real dollars into Missourians pockets for other uses and spending.[17]
- Nationally about ten percent of small business owners state that energy is their single biggest cost according to the National Federation of Independent Business. The same report indicates that an additional 25% of small business owners claim that energy is one of their top three business costs.[18] Thus, clean energy projects that reduce energy usage make businesses more profitable, allow for expansion, and could lead to higher wages for employees.
- Businesses can lower costs through on-site generation while also achieving other benefits.[19]
- Significant operational savings are possible through energy efficiency projects with rates of return as high as 25%.[20]

- A wealth of financing alternatives now exist for clean energy projects.[21]
- "Approximately 60% of the largest U.S. businesses have set public climate and energy goals to increase their use of renewable energy."[22]

Table 11 calculates the amount of application deposit revenue that the Department of Economic Development would receive given the number of projects identified in Table 10. If applications are submitted for projects equivalent to half the available tax credits then the department would receive $0.9 million in application deposit revenue. If applications are submitted for projects equivalent to all the available tax credits then the department would receive $1.7 million in application deposit revenue.

Table 11
Application Deposit Revenue

	Application Deposit Estimate for half of tax credits for applications FY 2018	Application Deposit Estimate for all of tax credits for applications FY 2018
# of projects		
Residential	2,466	4,933
Commercial	142	283
Total amount by type	2,608	5,216
Application deposit required per project		
Residential	$122	$122
Commercial	$4,000	$4,000
Application deposit revenue		
Residential	$300,852	$601,826
Commercial	$568,000	$1,132,000
Total amount by type	$868,852	$1,733,826

Table 12 shows the amount of solar capacity added by the number of projects identified in the previous tables given the given size of residential and commercial projects. A total of 43.4 MW would be added in solar capacity as a result of projects equivalent to half the available tax credits which would be 4.3% of the 1,000 MW goal that when achieved will sunset the tax credits. A total of 86.7 MW would be added in solar capacity as a result of projects equivalent to all the available tax credits which would be 8.7% of the 1,000 MW goal that when achieved will sunset the tax credits.

Table 12 Amount of Solar Capacity Added

	Capacity added for half of tax credits for applications FY 2018	Capacity added for all of tax credits for applications FY 2018
# of projects		
Residential	2,466.00	4,933.00
Commercial	142.00	283.00
Total amount by type	2,608	5,216
kW generated by construction		
Residential (6.1 kW/project)	15,043	30,091
Commercial (200 kW/project)	28,400	56,600
Total amount by type	43,443	86,691
MW generated by construction		
Residential	15.0	30.1
Commercial	28.4	56.6
Total amount by type	43.4	86.7
% of 1,000 MW goal achieved	4.3%	8.7%

Taxes

As noted on pages 10-11 of this fiscal analysis, the Missouri State Energy Plan published in October 2015 describes the current capacity, industry size, and investments being made in Missouri. The plan also describes the potential for jobs and economic development in the state. The 1,000 MW target represents a dramatic increase in current capacity. The following analysis assumes that due to the dramatic size of the 1,000 MW target that the investments driven by the clean energy tax credits will result in new jobs and industry expansion.

Table 13 shows the cost components of a solar construction project. Labor is assumed to be 35% of the project costs, materials 40%, and Profit 10%. It is assumed that 15% of the project cost is overhead and it is assumed that no taxes would be applied. Since Missouri already has a base of manufacturers and distributors it is assumed that all materials will be Missouri taxed.

Table 13
Construction Project Components, Tax Type, and Tax Rate

Project components	% of job	Missouri tax rate	Type tax
Labor	35.0%	6.00%	Income tax
Materials and local materials	40.0%	4.225%	Sales
Profit	10.0%	6.25%	Corporate
Overhead	15.0%	0.00%	N/A
subtotal by taxable type	100.0%		

Table 14 computes the state and local taxes based on the value of construction and the project components and tax rates shown in Table 13. Based on these assumptions the state general revenue fund is estimated to receive between $4.4 million to $8.9 million in FY 2018. The other three state funds (Prop C, Conservation, Parks/Soils) are estimated to receive between $0.6 million to $1.1 million in sales tax revenue in FY 2018.

For local tax revenue the General Assembly's Oversight Division uses a 3.88% local sales tax rate for its estimates in fiscal notes. That assumption is adopted here as well. Using this methodology results in an estimate of between $1.75 million to $3.5 million in local sales tax revenue in FY 2018.

Table 14
State and Local Taxes Generated by Construction

	Half of tax credits used - CY 2017	All of tax credits used - CY 2017
Amount of construction value needed to generate value of 35% tax credits	$112,842,369	$225,684,737
Labor	35%	35%
Materials and local materials	40%	40%
Profit	10%	10%
Amount of construction by taxable type		
Labor	$39,494,829	$78,989,658
Materials and local materials	$45,136,947	$90,273,895
Profit	$11,284,237	$22,568,474
subtotal by taxable type	$95,916,013	$191,832,027
General Revenue		
Labor - General Revenue Income Tax	$2,369,690	$4,739,379
Materials and local materials - Sales/Use Tax	$1,354,108	$2,708,217
Profit - General Revenue Corporate Tax	$705,265	$1,410,530
subtotal GR	$4,429,063	$8,858,126
Prop C		
Materials and local materials - Sales/Use Tax	$451,369	$902,739
Conservation		
Materials and local materials - Sales/Use Tax	$56,421	$112,842
Parks and Soils		
Materials and local materials - Sales/Use Tax	$45,137	$90,274
subtotal State Taxes	$4,981,991	$9,963,981
Local Taxes		
Materials and local materials - Sales/Use Tax		
subtotal Local Taxes	$1,751,314	$3,502,627
GRAND TOTAL - STATE AND LOCAL TAXES	$6,733,304	$13,466,608

The taxes generated from the construction activity shown in Table 14 likely underestimate the state revenue that will be generated by the construction of clean energy projects even within the short time period allowed in the fiscal note. As noted earlier there are multiplier effects that ripple through the economy. The Department of Economic Development through MERIC has a sophisticated model that it uses to evaluate the impact of tax credits and other business investments made in the State of Missouri. Using the information in this fiscal analysis MERIC should be able to provide supplementary information regarding the extra economic activity and increased revenues.

Similarly, generating additional clean energy within the State of Missouri will result in a decrease in the importation of power and energy producing raw materials from other states. Such money leakage from the state, businesses and citizens, decreases the amount of purchasing could be done for other purposes such as increased jobs within the state and thus the tax revenues that would be generated. For example, the Missouri State Energy Plan notes that Missouri is the sixth largest consumer of coal in the country and 92.5% of the coal used in 2013 was imported from Wyoming.[23] The plan reports that the state sends billions of dollars out of state for purchases of imported coal, natural gas, and transportation fuels.[24]

Community Solar Act - Applies to Versions 10, 12, 13, 14, 16, and 18
The Community Solar Act, section 386.910 of the proposal, directs the Missouri Public Service Commission to establish rules allowing customers to participate in a “community solar facility.” Community solar facilities allow participants to benefit from solar energy and receive electric bill credits substantially similar to net metering.

Paragraph 3 of that section states that the "aggregated capacity of community solar facilities located in the territory of each individual electrical corporation shall not be greater than four percent of the electrical corporation's single-hour peak load during the previous fiscal year." Table 15 shows the total peak demand data compiled by the Public Service Commission for the four utilities affected by this section. The report shows that using peak demand leads to a cap of 504.5 MW on the amount of aggregated capacity of community solar facilities statewide.

Table 15 - Peak Demand for Community Solar

Utility Name	Peak Demand
Union Electric Co - (MO)	7,713.0
Kansas City Power & Light Co	1,878.0
KCP&L Greater Missouri Operations Co.	1,860.0
Empire District Electric Co	1,162.0
Total	12,613.0
4% overall cap	504.5

Paragraph 2 of that section defines a community solar facility as a photovoltaic electric generation facility with a capacity of between 100 and 1,000 kW. For purposes of this fiscal note it is assumed that all community solar projects will be the same as the 200 kW project limit established in the clean energy tax credit language of 386.1000. In Table 12 above a low and high range was calculated for the percentage of solar capacity added through the tax credits based on the expectations of the phase-in necessary for the Department of Economic Development's implementation of the clean energy tax credits. The same percentage is used - 4.3% low range and 8.7% higher range. Similarly, for the purposes of this fiscal note the cost per kW will be $2,392 for a total project cost of $478,400 as shown in Table 9.

Table 16 shows the data and calculations needed to identify the number of projects. At the low end of the range 21.7 MW of added community solar capacity would be created which would require 108 projects of 200 kW. At the higher range 43.9 MW of added community solar capacity would be created which would require 219 projects of 200 kW.

Table 16 also shows that at an average project cost of $478,400 the low range results in $51.7 million in construction spending. The higher range results in $104.8 million in construction spending.

Table 16
Community Solar Capacity and Projects

	Low Range	Higher Range
Assumed % of aggregate capacity	4.3%	8.7%
Added capacity - MW	21.69	43.89
Added capacity - kW	21,694.36	43,893.24
# projects at commercial 200 kW per project	108	219
Construction cost - commercial project per 200 kW project	$478,400	$478,400
Construction value	$51,667,200	$104,769,600

Table 17 computes the state and local taxes based on the value of construction and the project components and tax rates shown earlier in Table 13. Based on these assumptions the state general revenue fund is estimated to receive between $2.0 million to $4.1 million in FY 2018. The other three state funds (Prop C, Conservation, Parks/Soils) are estimated to receive between $0.2 million to $0.5 million in sales tax revenue in FY 2018.

For local tax revenue the General Assembly's Oversight Division uses a 3.88% local sales tax rate for its estimates in fiscal notes. That assumption is adopted here as well. Using this methodology results in an estimate of between $0.8 million to $1.6 million in local sales tax revenue in FY 2018.

Table 17
State and Local Taxes Generated by Construction of Community Solar Projects

	Low range	Higher range
Amount of construction value needed to generate estimated MW	$51,667,200	$104,769,600
Labor	35%	35%
Materials and local materials	40%	40%
Profit	10%	10%
Amount of construction by taxable type		
Labor	$18,083,520	$36,669,360
Materials and local materials	$20,666,880	$41,907,840
Profit	$5,166,720	$10,476,960
subtotal by taxable type	$43,917,120	$89,054,160
General Revenue		
Labor - General Revenue Income Tax	$1,085,011	$2,200,162
Materials and local materials - Sales/Use Tax	$620,006	$1,257,235
Profit - General Revenue Corporate Tax	$322,920	$654,810
subtotal GR	$2,027,938	$4,112,207
Prop C		
Materials and local materials - Sales/Use Tax	$206,669	$419,078
Conservation		
Materials and local materials - Sales/Use Tax	$25,834	$52,385
Parks and Soils		
Materials and local materials - Sales/Use Tax	$20,667	$41,908
subtotal State Taxes	$2,281,107	$4,625,578
Local Taxes		
Materials and local materials - Sales/Use Tax		
subtotal Local Taxes	$801,875	$1,626,024
GRAND TOTAL - STATE AND LOCAL TAXES	$3,082,982	$6,251,602

Net metering bills - Applies to Versions 10, 11, 12, 13, 14, 17 and 18
The Missouri General Assembly has considered six net metering bills over the past three legislative sessions. Table 18 below identifies the bills and provides links to the fiscal note and bill summary prepared for each bill. All of the fiscal notes prepared and available indicated that there was no state impact from the net metering bills.

Table 18
NET METERING
2013, 2014, AND 2015 LEGISLATIVE SESSIONS

Session	Bill	Sponsor	Fiscal Note Impact	Fiscal Note Summary Link	Bill Summary Link
2015	SB 75	Holsman	No impact	http://www.moga.mo.gov/OverSight/Over20151//fispdf/0622-01N.ORG.pdf	http://www.senate.mo.gov/15info/BTS_Web/Summary.aspx?SessionType=R&SummaryID=82&BillID=174
2015	SB 509	Holsman	No impact	N/A	http://www.senate.mo.gov/15info/BTS_Web/Summary.aspx?SessionType=R&SummaryID=664&BillID=4599469
2015	HB 481	Berry (38)	No impact	http://www.moga.mo.gov/OverSight/Over20151//fispdf/0502-01N.ORG.pdf	http://house.mo.gov/billtracking/bills151/sumpdf/HB0481C.pdf
2014	HB 1795	Berry (38)	No impact	http://www.moga.mo.gov/Oversight/OVER14/fishtm/5552-02N.ORG.htm	http://house.mo.gov/billtracking/bills141/sumpdf/HB1795I.pdf
2013	HB 119	Berry (38)	No impact	http://www.moga.mo.gov/Oversight/OVER13/fishtm/0794-02N.ORG.htm	http://house.mo.gov/billtracking/bills131/sumpdf/HB0119I.pdf
2013	SB 396	Holsman	No impact	http://www.moga.mo.gov/Oversight/OVER13/fishtm/1078-07N.ORG.htm	http://www.senate.mo.gov/13info/BTS_Web/Bill.aspx?SessionType=R&BillID=19218703

Electric Vehicle Charging Stations - Applies to Versions 12, 13, 14, 16, and 17
The petition authorizes investor-owned utilities to recover costs for infrastructure investments in electric vehicle charging stations, provided the energy output from the stations is offset in part by clean energy. There should be no fiscal impact to the state. Utility investment in electric charging stations will result in positive economic activity similar to other capital investments. However, the range of the benefits is unknown at this time.

ENDNOTES

[1] U.S. Energy Information Administration: *Table 10: All Sectors - Class of ownership, number of consumers, sales, revenue, and average retail price by State and utility*
http://www.eia.gov/electricity/sales_revenue_price/

[2] U.S. Energy Information Administration: *Supplemental Data: 1990 - 2013 Revenue from Retail Sales of Electricity by State by Sector by Provider (EIA-861)*
http://www.eia.gov/electricity/sales_revenue_price/

[3] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 25
https://energy.mo.gov/energy/docs/MCSEP.pdf

[4] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 25-26
https://energy.mo.gov/energy/docs/MCSEP.pdf

[5] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 162-164
https://energy.mo.gov/energy/docs/MCSEP.pdf

[6] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 200
https://energy.mo.gov/energy/docs/MCSEP.pdf

[7] National Renewable Energy Laboratory, "*Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections 2015 Edition*", p. 5
http://www.nrel.gov/docs/fy15osti/64898.pdf

[8] National Renewable Energy Laboratory, "*Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections 2015 Edition*", p. 4
http://www.nrel.gov/docs/fy15osti/64898.pdf

[9] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 172
https://energy.mo.gov/energy/docs/MCSEP.pdf

[10] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 173
https://energy.mo.gov/energy/docs/MCSEP.pdf

[11] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 176
https://energy.mo.gov/energy/docs/MCSEP.pdf

[12] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 176
https://energy.mo.gov/energy/docs/MCSEP.pdf

[13] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 174
https://energy.mo.gov/energy/docs/MCSEP.pdf

[14] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 175
https://energy.mo.gov/energy/docs/MCSEP.pdf

[15] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 190-191, 193, 195-199, 201, 203
https://energy.mo.gov/energy/docs/MCSEP.pdf

[16] Thomas A Loudat, Blue Planet Foundation. "*The Economic and Fiscal Effects of Hawaii's Solar Tax Credit*" - January 2013.
http://blueplanetfoundation.org/renewable-energy-tax-credit-2013.html?highlight=WyJsb3VkYXQiXQ==

[17] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 154
https://energy.mo.gov/energy/docs/MCSEP.pdf

[18] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 165 for both sentences in this bullet point
https://energy.mo.gov/energy/docs/MCSEP.pdf

[19] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 166
https://energy.mo.gov/energy/docs/MCSEP.pdf

[20] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 166
https://energy.mo.gov/energy/docs/MCSEP.pdf

[21] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 162-164
https://energy.mo.gov/energy/docs/MCSEP.pdf

[22] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 178
https://energy.mo.gov/energy/docs/MCSEP.pdf

[23] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 20-21
https://energy.mo.gov/energy/docs/MCSEP.pdf

[24] Missouri Department of Economic Development, Division of Energy, "*Missouri Comprehensive State Energy Plan*" October 2015, p. 42
https://energy.mo.gov/energy/docs/MCSEP.pdf

Edward D, Greim provided the following information as an opponent of this initiative petition.

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December 28, 2015

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Re: *Fiscal Note in Initiative Petitions 2016-173 through 2016-180 and 2016-190*

To Whom It May Concern:

Based on the information contained in this letter, we propose the following fiscal note summary for petitions 173, 175, 177, and 180:

> Lost revenue to state government is $498 million over the tax credit period, with annual losses of $9.5 million to $11.5 million thereafter. Lost revenue to local government is $189.1 million over the tax credit period, with annual losses of $31.5 million to $33.9 million thereafter.

We propose the following fiscal note summary for petition 174:

> Lost revenue to state government is $320.9 million over the tax credit period, with annual losses of $5.6 million to $9.6 million thereafter. Lost revenue to local government is $100.9 million over the tax credit period, with annual losses of $20 million to $28.1 million thereafter.

We propose the following fiscal note summary for petition 176:

> Lost revenue to state government is $328.8 million over the tax credit period, with annual losses of $7.5 million to $11.5 million thereafter. Lost revenue to local government is $175.3 million over the tax credit period, with annual losses of $32.4 million to $40.5 million thereafter.

We propose the following fiscal note summary for petition 178:

> Lost revenue to state government is $475.8 million over the tax credit period, with annual losses of $5.7 million to $7.7 million thereafter. Lost revenue to local government is $40.4 million over the tax credit period, with annual losses of $11.5 million to $15.7 million thereafter.

We propose the following fiscal note summary for petitions 179 and 190:

> Lost revenue to state government is $483.7 million over the tax credit period, with annual losses of $7.6 million to $9.6 million thereafter. Lost revenue to local government is $114.8 million over the tax credit period, with annual losses of $23.9 million to $28.1 million thereafter.

Introduction

Missouri electric utilities are tightly regulated by the Public Service Commission, which regulates price, reliability, and customer service, among other areas. These utilities pay hundreds of millions dollars of taxes to Missouri state government and local governments. These taxes, however, will no longer be collected for electricity that is never sold due to the customer-generator production and community solar encouraged by the initiative petitions. Petition signers and voters must be informed of the certainty that the initiative petition will result in the loss of hundreds of millions of dollars of tax revenue to state and local governments due to tax credits and decreases in electricity sales volume. On the other hand, any positive fiscal impacts of the initiative petitions are speculative.

Description of Policy

Initiative Petitions 173 – 180 and 190 contains one or more of three main statutory provisions: (1) Changes to the Missouri Net Metering and Easy Connection Act; (2) Adoption of the "Community Solar Act"; and (3) A state tax credit for projects producing electrical energy from a clean energy resource – solar, wind, hydroelectric, or certain natural gas technologies.

1. Changes to Net Metering for Investor-owned electric utilities and municipal electric utilities, and, in 177, rural electric cooperatives
    A. Raise net metering cap to 7% (is currently 5%);
    B. Makes utilities generally responsible for purchasing necessary additional equipment/meter to accommodate the customer-generator's facility;
    C. Net excess energy credits expire every March, rather than after 12 months (but there is no compensation for net excess energy credits);

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D. Any costs incurred under this act by a retail electric supplier shall be recoverable in that utility's rate structure.

2. Community Solar Act
   A. The Missouri Public Service Commission ("PSC") adopts rules and regulations allowing groups of 5 or more electrical corporation customers to offset energy usage with solar located in the service territory of the electrical corporation where they have an account;
   B. Facilities are 100 kilowatts to 1 megawatt;
   C. Community solar facilities may, in total, generate electricity of 4% or less of single-hour peak load, but that amount does not count toward net metering; Electrical corporations can own half (max of 2%), which may be included in the rate base. Others may own the other half (max of 2%);
   D. Community Solar facilities are not eligible for tax credits provided in the petition;
   E. Commission sets a community solar rate, not less than electrical corporation's average retail rate;
   F. Value of allocated solar bill credits reduces customer's total bill;
   G. The current value-of-community-solar rate may be locked in for 20 years beginning when a community solar facility is put in operation.

3. Tax credit
   A. 35% tax credit for projects producing electrical energy from a clean energy resource – solar, wind, hydroelectric, etc.
   B. Total value of eligible credits shall not exceed 1% of the value of electricity used in Missouri[1] – defined as revenue from sale of electricity in Missouri; or tax credits are capped at$50 million each year. Unused credits carryover year to year until June 30, 2022
   C. No tax credits after June 30, 2022, or after 1000 megawatts of new generation have been installed using the tax credits.

Burdens on State Government

In determining the fiscal impact of each petition, it is generally reasonable to assume that the various statutory changes in the petitions will have independent fiscal impacts. The reasonableness of this assumption is demonstrated by the various iterations of the petitions themselves, some of which propose tax credits with no proposed changes to the Net Metering and Easy Connection Act. *See* Petitions 178 and 190.

[1] The value of electricity used in Missouri in 2014 was 7.6 billion, and the value has increased every year since 2003. *See* U.S. Energy Information Administration – Independent Statistics and Analysis.

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i. Decreased tax collection due to changes to net metering – Initiative Petitions 173-177 and 179-180

Raising the net metering cap from the current 5% of peak hour demand to 7% of peak hour demand will, conservatively, result in a 2% decrease in electricity sales volume, when such changes are paired with other changes suggested by the petition. This assumption is conservative for several reasons. First, the current level of net metering is less than the current 5% cap due to the cost of solar and other residential net metering equipment, meaning that the changes to current net metering scheme may result in more than a simple increase from 5% to 7%. Second, the declining price of solar and other renewable energy sources, paired with federal solar tax credits (30% federal tax credit) and a 35% state tax credit as proposed in the petition provides a strong financial incentive to solar or wind energy net metering, because customers can buy increasingly affordable technology at an additional 55% discount[2], suggesting that individuals and corporations will take full advantage of the state and federal tax credits. In this sense, however, the move to full 5% net metering will eventually occur due to declining prices for residential and commercial customer energy generation, coupled with increasing prices in the retail price of electricity. Third, the net-metering cap applies to single-hour peak load, determined yearly, which means that the cap is a higher percentage of the single hour average load. This fact means that the total increase in generation is higher than it appears. Fourth, technology changes allow customers to decrease their bill by a greater percentage than they decrease their usage. The commercialization of residential and commercial energy storage technology, like home batteries,[3] also allows customers to use their net-metering capacity more efficiently, because customers can completely offset usage during costly high demand periods.

A 2% decrease in electricity sales volume will reduce Missouri state sales tax revenues from investor-owned electric utilities by at least $1.9 million annually. The cost from 2017 through 2022 is $7.9 million. This number is calculated using actual state sales taxes paid in 2014 by investor-owned electric utilities. The additional decreases in sales tax revenues from municipal electric utilities and, in petition 177, from electric cooperatives, are unknown but substantial.[4]

ii. Decreased tax collections due to Community Solar Act – Initiative Petitions 173, 175-177, 180, and 190

Community solar facilities are in addition to net metering and represent an additional capacity amounting to 4% of each electrical corporation's single-hour peak load. Energy

[2] The 35% state tax credit reduces the basis eligible for the 30% federal tax credit.
[3] One such energy storage/battery innovation is the Tesla Powerwall. https://www.teslamotors.com/powerwall.
[4] Assuming $7.6 billion in electricity is sold in Missouri per year (the actual 2014 figure), a 2% decrease will decrease overall state sales tax revenues by 6.4 million annually, but some petitions enact net metering changes on rural electric cooperatives, and some do not.

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generated from the community solar facility is allocated pro rata by the community solar facility owner or operator. Energy production allocation is done via "bill credits" that decrease the sales and gross receipts a utility receives from electricity sales. There is the potential for such bill credits to decrease overall electrical bills by more than 4% because the "bill credits" are calculated using a "value of solar rate" which is at least as high as the retail rate for electricity, but may be higher. If, for example, solar energy received a 50% rate premium due to its benefits, the amount of bill credits would increase and sales would decrease by more than the 6%, rather than 4% figure. Half of these community solar facilities—the half not owned by electrical corporations—may be operated in a manner, such as fractional ownership by customers or ownership by a nonprofit, that avoid property tax, sales tax, and license/franchise taxes. There is a strong financial incentive to operate these facilities in a fractional ownership model, similar to net metering, because doing so avoids state sales tax (4.225%), local sales tax (generally, 3.5-4%) and local utility license/franchise tax (generally, 5%).

A 2% decrease in electricity sales volume will reduce Missouri state sales tax revenues from investor-owned electric utilities by at least $1.9 million annually. The cost from 2017 through 2022 is $7.9 million. This number is calculated using actual state sales taxes paid in 2014 by investor-owned electric utilities.

iii. Tax credits – Initiative Petitions 173-180 and 190

a. Decreased tax collections due to tax credits – Credits capped at 1% of value of electricity sold in Missouri, annually ($76 million based on 2014 figures) – Initiative Petitions 173, 175, 177-180, and 190

According to 2014 figures, Missouri retail customers bought 7.6 billion dollars worth of electricity in 2014. Accordingly, it is reasonable for fiscal note purposes to estimate that Missouri retail customer will continue to buy the same value of electricity. Electricity rates have historically risen over time, but the increasing price of electricity may be approximately the same over the relevant period as the decreases in quantity as a result of the initiative petitions. Accordingly, the 35% tax credits in these petitions will directly result in a loss of state income of approximately $76 million, annually.

b. Decreased tax collections due to tax credits – Credits capped at $50 million annually – Initiative Petitions 174 and 176

Similar to the loss described in subpart a, the 35% tax credits in these petitions will directly result in a loss of state income of approximately $50 million, annually.

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c. Cost of eroding tax base due to new energy generation – Initiative Petitions 173-180 and 190

To determine the impact of new customer energy generation on state sales tax revenues, we must first calculate the value of sales lost due to new customer-generated energy production. Based on federal government data, we assume that the sun shines on average 5 hours per day in Missouri. Accordingly, if the tax credits were phased out due to reaching the 1000 MWh/1,000,000 kWh maximum on new electricity generation, new production from such tax credits would produce approximately 1,825,000 MWh per year, also expressed as 1,825,000,000 KWh, or 1,825 million KWh (1,000 MWh * 5 hours per day * 365 days per year). Based on an assumed average retail price of electricity in Missouri of $100 per megawatt/hour [5], this new production is valued at $182,500,000.

This new electricity generation is used by customers to offset charges they would otherwise incur on their bills. Accordingly, this amount of electricity will no longer be sold by Missouri utilities and electric cooperatives, and the state and local governments will lose sales tax revenues. The Missouri state sales tax rate is 4.225%.

In practice, the 1 gigawatt limit on new customer-generated energy production may never be met. Credible independent analysts believe the installed cost of solar will be $1.77 per watt in 2017 ($1770 per kilowatt).[6] The cost is expected to further decline over time, but it is reasonable to assume a constant $1.77 per watt installed cost for renewable energy resources according to the petition because of the competing forces of price inflation and decreased production costs of emerging technology. The petition itself limits tax credits to a maximum of $3.00 per watt, but market forces should make rates in Missouri similar to those in other states, at or around $1.77.

For Initiative Petitions 173, 175, 177-180, and 190, the total, annual loss to state governments *due to the tax credits* is 76.9 million to 81.7 million over the tax credit period. There is an annual loss in perpetuity after the tax credit period of 5.7 to 7.7 million, depending on how much new customer-generation is developed. See attached table.

For Initiative Petitions 174 and 176, the total, annual loss to state governments *due to the tax credits* is 50.6 million to 53.7 million over the tax credit period. There is an annual loss in

[5] In 2014, the average price of electricity in Missouri was $91.10 per megawatt/hour. The $100 an hour cost estimate is conservative as an average cost over the relevant period of the tax credits and beyond.

[6] Some solar companies have forecasted a cost of under $1.00 per watt full installed by 2017. Comments of First Solar CEO, 'By 2017, We'll Be Under $1.00 per Watt Fully Installed', June 24, 2015, http://www.greentechmedia.com/articles/read/First-Solar-CEO-By-2017-Well-be-Under-1.00-Per-Watt-Fully-Installed.

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perpetuity after the tax credit period of 3.7 to 7.7 million, depending on how much new customer-generation is developed. *See* attached table.

Burdens on Local Governments

Local governments face losses in revenue from the various petition provisions that are similar to those faced by state government (with the exception of the direct losses to state government for the tax credits). In fact, local governments face a more significant burden because utility revenues make up a comparatively higher portion of the local governments' tax base. Missouri's electric utilities are large sources of local tax revenue, including property tax, sales tax (on average 3.585%) and license tax (approximately 5%). The amounts at issue are substantial. For example, Missouri electric utilities paid over $522 million in license taxes to local governments in 2014. Determining exactly how much of this revenue will be lost due to various provisions in the petition is uncertain and may require the expenditure of substantial litigation costs by some or all Missouri municipalities.

i. Decreased tax collection due to changes to net metering – Initiative Petitions 173-177 and 179-180

A 2% decrease in electricity sales volume will reduce local government tax revenues from investor-owned electric utilities by approximately 12.4 million annually (.02 * [sales tax and franchise/license taxes paid to Missouri local governments in 2014]). The cost from 2017 through 2022 is $74.4 million.

ii. Decreased tax collections due to Community Solar Act – Initiative Petitions 173, 175-177, 180, and 190

A 2% decrease in electricity sales volume will reduce local government tax revenues from investor-owned electric utilities by approximately 12.4 million annually (.02 * [sales tax and franchise/license taxes paid to Missouri local governments in 2014]). The cost from 2017 through 2022 is $74.4 million.

iii. Tax credits – Cost of eroding tax base due to new energy generation – Initiative Petitions 173-180 and 190

The calculation of lost revenue for local governments is substantially similar as the calculation for state government lost sales tax. Local governments will collect less tax revenue from their various local taxes due to the decrease in demand for utility-provided electricity. The availability of lower local government taxes is a strong financial incentive for large-scale electricity users to invest in customer-generator projects supported by the petition. Further, Missouri's electric utilities are invested in Missouri and its local communities. The initiative petitions may jeopardize the jobs of Missouri electric utilities' employees to the extent the utilities suffer decreased revenue. Missouri electric utilities provide numerous other benefits to

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local governments, all of which may be reduced or discontinued if the initiative petitions are enacted.

The population weighted combined average state and local sales tax in Missouri is estimated at 7.81%.[7] Based on this estimate, the population-weighted combined average local sales tax is 3.585%. Assuming the tax credits sunset due to reaching the 1 Gigawatt production cap, the yearly loss to local governments from lost sales tax from the tax credit is $6,541,578. Assuming a license tax/franchise rate on electric utility service of 5%, which may be more or less depending on the municipality, if any, where electricity is sold, the additional lost local revenue from the loss of sales subject to license tax is $9,123,540.

For petitions 173, 175, 177-180, and 190, the loss to local governments due to the tax credits is at least $40.4 million over the tax credit period, then $11.5 to $15.7 million annually. For initiative petitions 174 and 176, the loss to local governments due to the tax credits is at least $26.6 million over the tax credit period, then $7.5 to $15.7 million annually.

In Conclusion

The initiative petitions will result in substantial, reasonably determinable losses in tax revenues to Missouri state government and local governments. State government incurs tax losses through the issuance of tax credits as well as the loss of electricity sales volume through certain changes promulgated by the petitions, such as increases in net metering and community solar. The total tax burden on state government imposed by the petitions range from $313 million over the tax credit period, with $3.7 to $7.7 million in lost revenues in perpetuity, to approximately $498.6 million over the tax credit period,[8] with $9.5 million to 11.5 million in lost revenues in perpetuity thereafter.

Sincerely,

Edward D. Greim
Graves Garrett LLC

Additional Works Cited

Revenue from retail sales of electricity in Missouri

U.S. Energy Information Administration – Independent Statistics & Analysis - Table of Missouri Revenues

[7] http://taxfoundation.org/sites/taxfoundation.org/files/docs/LOST--2015.png.
[8] $475.8 million + [(1.9 million + 1.9 million)*6 years]

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https://www.eia.gov/electricity/data/browser/#/topic/6?agg=01&geo=000002&endsec=vg&linechart=ELEC.REV.MO-ALL.A&columnchart=ELEC.REV.MO-ALL.A&map=ELEC.REV.MO-ALL.A&freq=A&ctype=linechart&ltype=pin&rtype=s&pin=&rse=0&maptype=0

Table of Deutsche Bank Solar Cost estimates – Cost trajectory on pace for a ~40% reduction by the end of 2017

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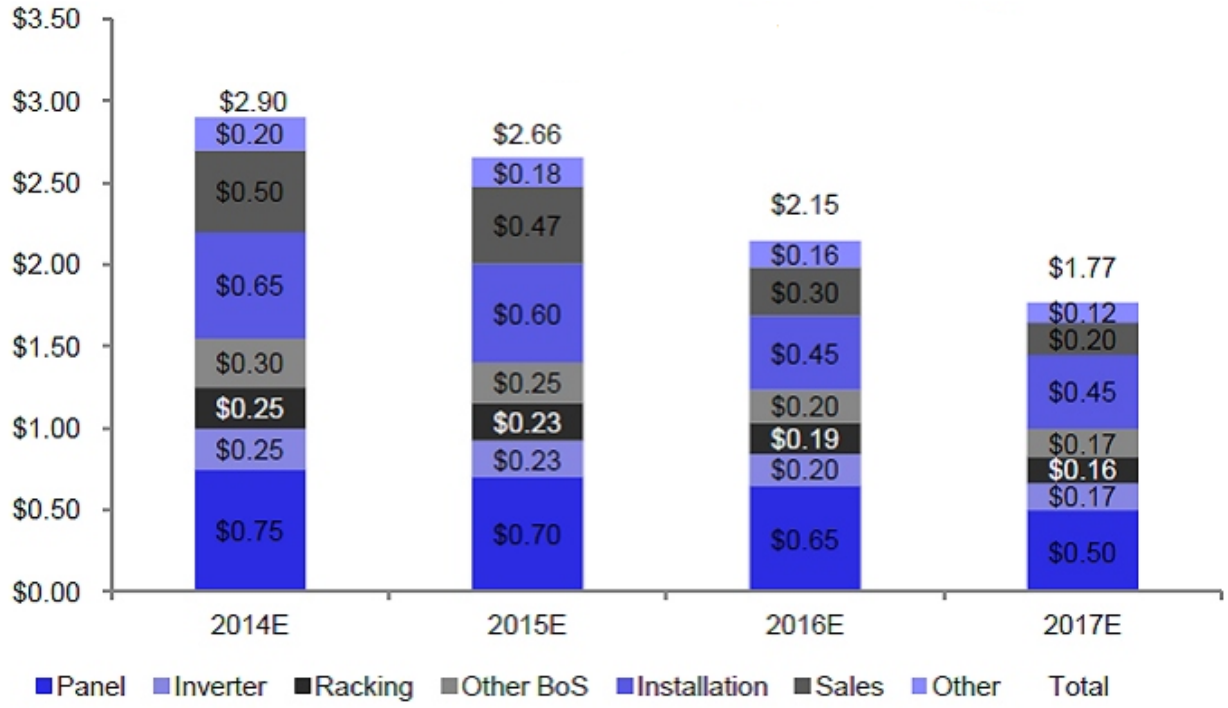

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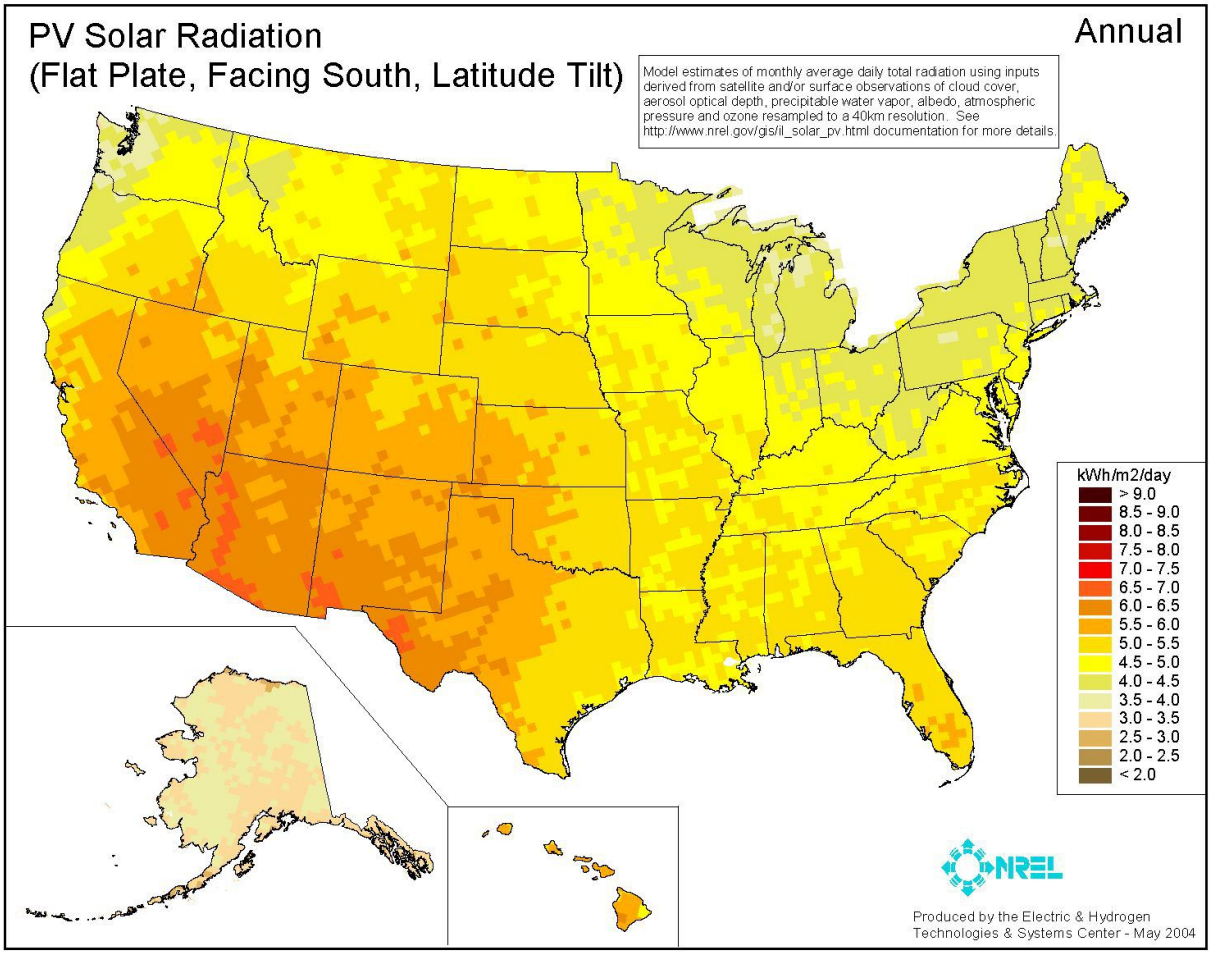

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Brightergy Renewable Tax Credit Fiscal Analysis (1% Value of Electricity Cap) - Initiative Petitions 173, 175, 177-180, and 190

$/kW Installed Cost	$1,770	
MW's Installed	122.68	
Tax Rebate Incentive %	35%	
Tax Limit	$76,000,000	
Solar Capacity Factor	20.83%	5 hours / 24 hours
MW's of Output	223,854	
$/MWh Retail Rate	$100	

	Renewable Tax Rebate	MW's Installed	Cumulative MW's Installed	MWh's Solar	Avg Retail Rate	Lost Utility Revenue	State Sales Tax Rate	Lost State Sales Tax Revenue	Annual State Tax Burden	Local Sales Tax Rate	Lost Local Sales Tax Revenue	Franchise Tax Rate	Lost Local Franchise Tax Revenue	Annual Local Tax Burden
2017	$76,000,000	122.68	122.68	223,854	$100	$22,385,441	4.225%	$945,785	$76,945,785	3.585%	$802,518	5.000%	$1,119,272	$1,921,790
2018	$76,000,000	122.68	245.36	447,709	$100	$44,770,882	4.225%	$1,891,570	$77,891,570	3.585%	$1,605,036	5.000%	$2,238,544	$3,843,580
2019	$76,000,000	122.68	368.04	671,563	$100	$67,156,323	4.225%	$2,837,355	$78,837,355	3.585%	$2,407,554	5.000%	$3,357,816	$5,765,370
2020	$76,000,000	122.68	490.72	895,418	$100	$89,541,765	4.225%	$3,783,140	$79,783,140	3.585%	$3,210,072	5.000%	$4,477,088	$7,687,160
2021	$76,000,000	122.68	613.40	1,119,272	$100	$111,927,206	4.225%	$4,728,924	$80,728,924	3.585%	$4,012,590	5.000%	$5,596,360	$9,608,951
2022	$76,000,000	122.68	736.08	1,343,126	$100	$134,312,647	4.225%	$5,674,709	$81,674,709	3.585%	$4,815,108	5.000%	$6,715,632	$11,530,741
								Total State Tax Burden	**$475,861,483**		**Total Local Tax Burden (Sales + Franchise)**		**$40,357,593**	
Perpetual Impact if New Generation Reaches 1 Gigawatt Cap														
			1000.00	1,824,708	$100	$182,470,800	4.225%	$7,709,391	$7,709,391	3.585%	$6,541,578	5.000%	$9,123,540	$15,665,118

Brightergy Renewable Tax Credit Fiscal Analysis (50 Million Tax Credit Cap) - Initiative Petitions 174 and 176

$/kW Installed Cost	$1,770	
MW's Installed	80.71	
Tax Rebate Incentive %	35%	
Tax Limit	$50,000,000	
Solar Capacity Factor	20.83%	5 hours / 24 hours
MW's of Output	147,273	
$/MWh Retail Rate	$100	

	Renewable Tax Rebate	MW's Installed	Cumulative MW's Installed	MWh's Solar	Avg Retail Rate	Lost Utility Revenue	State Sales Tax Rate	Lost State Sales Tax Revenue	Annual State Tax Burden	Local Sales Tax Rate	Lost Local Sales Tax Revenue	Franchise Tax Rate	Lost Local Franchise Tax Revenue	Annual Local Tax Burden
2017	$50,000,000	80.71	80.71	147,273	$100	$14,727,264	4.225%	$622,227	$50,622,227	3.585%	$527,972	5.000%	$736,363	$1,264,336
2018	$50,000,000	80.71	161.42	294,545	$100	$29,454,528	4.225%	$1,244,454	$51,244,454	3.585%	$1,055,945	5.000%	$1,472,726	$2,528,671
2019	$50,000,000	80.71	242.13	441,818	$100	$44,181,792	4.225%	$1,866,681	$51,866,681	3.585%	$1,583,917	5.000%	$2,209,090	$3,793,007
2020	$50,000,000	80.71	322.84	589,091	$100	$58,909,056	4.225%	$2,488,908	$52,488,908	3.585%	$2,111,890	5.000%	$2,945,453	$5,057,342
2021	$50,000,000	80.71	403.55	736,363	$100	$73,636,320	4.225%	$3,111,135	$53,111,135	3.585%	$2,639,862	5.000%	$3,681,816	$6,321,678
2022	$50,000,000	80.71	484.26	883,636	$100	$88,363,584	4.225%	$3,733,361	$53,733,361	3.585%	$3,167,834	5.000%	$4,418,179	$7,586,014
								Total State Tax Burden	**$313,066,765**		**Total Local Tax Burden (Sales + Franchise)**		**$26,551,048**	
Perpetual Impact if New Generation Reaches 1 Gigawatt Cap														
			1000.00	1,824,708	$100	$182,470,800	4.225%	$7,709,391	$7,709,391	3.585%	$6,541,578	5.000%	$9,123,540	$15,665,118

Brent Stewart provided the following information as an opponent of this initiative petition.

Association of Missouri Electric Cooperatives

2722 East McCarty Street, P.O. Box 1645
Jefferson City, Missouri 65102
Telephone: (573) 635-6857
Fax: (573) 635-2314
www.amec.coop

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December 28, 2015

Missouri State Auditor's Office
301 West High Street
Office 880
P.O. Box 869
Jefferson City, Missouri 65102

Re: Fiscal Note in Initiative Petitions 2016-173 through 2016-190

To Whom It May Concern:

The Association of Missouri Electric Cooperatives (AMEC), representing the state's forty-seven member-owned, nonprofit rural electric cooperatives that serve close to one million electric consumers, respectfully submit the following brief comments to assist in your preparation of the fiscal notes on the above-mentioned initiative petitions.

All these petitions, in one way or another, involve solar and renewable energy mandates. The practical effect of each, to one extent or another, is to encourage consumers to substitute self-generation for traditional electric service, thereby creating an unfair electric rate subsidy in favor of those who can afford to install their own generation at the expense of the majority of the other consumers who cannot.

Missouri's forty distribution (retail level) cooperatives serve a wide variety of governmental entities throughout rural Missouri, including state facilities (e.g. prisons), local government facilities, hospitals, schools, rural water districts, regional sewer districts and others. To the extent these entities cannot afford to install their own generation, which most cannot, they necessarily will be forced to pay higher rates if these initiative petitions are enacted. Unfortunately, it is impossible without more time for AMEC to identify all those government-related entities and facilities or estimate with any accuracy the adverse fiscal impact. However, it is clear that even a modest rate increase necessarily will have a significant adverse fiscal impact on governmental entities, in millions of dollars, especially those in the primarily less affluent rural areas served by Missouri's nonprofit electric cooperatives.

Respectfully submitted,

Brent Stewart

Brent Stewart
AMEC Counsel

The State Auditor's office did not receive a response from the **Department of Elementary and Secondary Education,** the **Department of Transportation,** the **State Treasurer's office, Adair County, Boone County, Callaway County, Cass County, Clay County, Cole County, Jackson County Legislators, Jasper County, St. Charles County, St. Louis County, Taney County,** the **City of Cape Girardeau,** the **City of Columbia,** the **City of Jefferson,** the **City of Joplin,** the **City of Kirksville,** the **City of Mexico,** the **City of Raymore,** the **City of St. Joseph,** the **City of St. Louis,** the **City of Springfield,** the **City of Union,** the **City of Wentzville, Cape Girardeau 63 School District, Hannibal 60 School District, State Technical College of Missouri, Metropolitan Community College,** and **St. Louis Community College.**

Fiscal Note Summary

State government revenue may decrease up to $456 million during the tax credit period with approximately $1 million annual increased operating costs. Local governmental entities estimate $23.9 million in annual electricity sales reductions. Other resulting economic activity will have an unknown impact on state and local governments.