III. B.

Memorandum
Planning & Development Services Division

To: **Planning and Public Works Committee**

From: Kevin Neill, Project Planner

Date: October 15, 2012

RE: **Solar Energy Research**

CC: Aimee Nassif, Planning & Development Services Director

Request

At the request of the Planning and Public Works Committee, the Planning and Development Services Division has researched best practices in solar panel regulation and current legislation in both local municipalities as well as across the country to determine if the current regulations of the City of Chesterfield are sufficiently addressing issues and concerns surrounding the use of solar energy on residentially zoned property.

After months of research, data collection, and speaking with surrounding communities, Staff recommends that a solar energy ordinance be drafted to regulate the use of solar energy systems and structures on all property located within the City of Chesterfield.

Background

Throughout the nation, there has been a growing interest in solar energy as an efficient, alternative energy source to non-renewable sources like coal, petroleum, and natural gas. On-site solar energy products have been on the market for more than twenty years, but numerous barriers, such as high acquisition and installation costs, complicated permitting and system connection procedures, and a lack of awareness, limit accessibility and affordability.

An increase in the number of qualified local contractors, coupled with the current state and federal rebates available to consumers, has caused a considerable increase in residential solar panel installations in the last decade. With an expectation that this trend will continue, the City of Chesterfield should expect to see a growing number of installations on residential, commercial and institutional properties. As interest in solar energy systems continues to grow, the City of Chesterfield has an important role to play in protecting the health, safety and welfare of the community while promoting the use of alternative energy sources. Municipalities across the country have begun to enact legislation that details the definitions, use, dimensional standards, and development standards of alternative energy systems. For small scale solar applications like those located on residential properties, local ordinances often dictate height, minimum lot and roof setbacks, and lot coverage in order to minimize visual impact. As regional and national examples detailed in this report show, local ordinances vary widely in terms of restrictions

imposed on the use, siting, and appearance of solar energy systems. In addition to zoning-related regulations, local governments also must ensure that solar energy systems meet building code requirements. The application/review/permitting process for both zoning and building code approval can be extensive, and in cases where zoning code does not explicitly address the criteria and/or process through which solar energy systems are allowed, local municipalities may find it difficult to regulate unsightly solar panel installations.

Image 1: A residential PV installation in Johns Creek, GA.

Solar Energy Systems

There are two typical solar energy systems commonly utilized for residential applications: photovoltaic systems and solar thermal systems. Photovoltaic systems, or PV systems, utilize flat, rectangular panels of photovoltaic cells that convert light energy into electricity. These panels are often grouped into arrays of multiple panels that can supply a residential property with part or all of its electricity needs. In the St. Louis area, property owners with PV systems can take advantage of Ameren UE's net metering policy, which allows property owners to sell unused electricity generated on-site back to Ameren UE.

Solar thermal systems are designed to utilize the energy of light to heat fluids, vapors, or metals that in turn heat a building's hot water supply. Like PV systems, many solar thermal systems are designed as flat panels that can be placed on rooftops in order to maximize exposure to the sun. While solar thermal systems were initially more cost-effective than PV systems, the price of PV systems has decreased substantially in recent years. In addition, solar thermal systems are limited in their applications and are only intended to heat water and air, while photovoltaic systems supply electricity that can be used for a variety of uses.

Solar energy technology and residential solar energy systems are continuing to evolve, and new technologies like thin film photovoltaic cells are expanding opportunities for solar energy systems to be

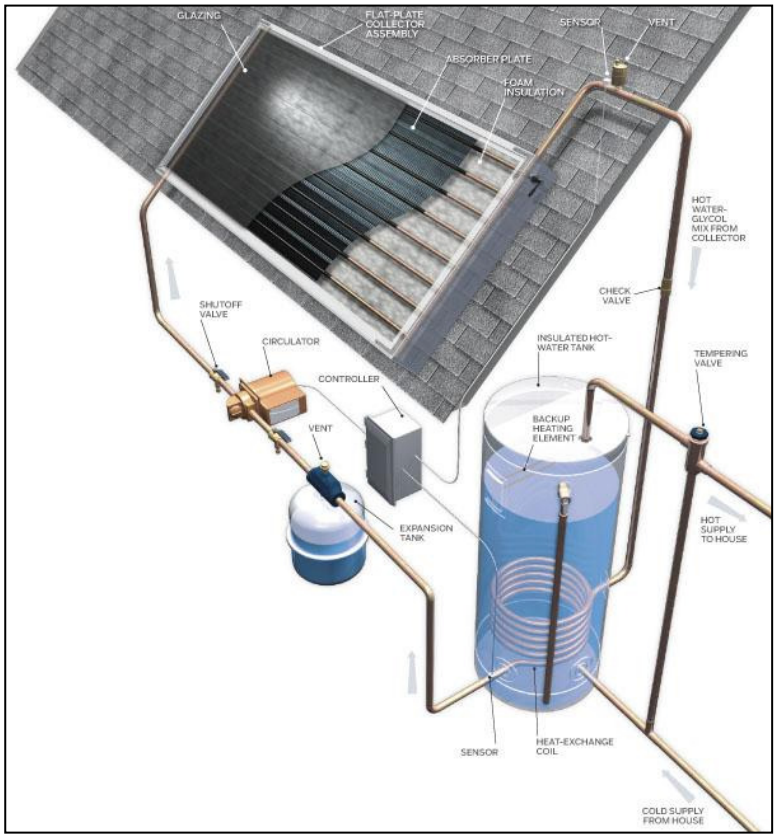

Image 2: Diagram of a solar thermal system installation and connections to the hot water tank.

integrated into building materials like glass and roof tiles. Municipalities with more recently-adopted renewable energy ordinances have addressed these emerging systems in their municipal code.

Current Tax Credits and Rebates

Federal tax credits for consumer energy efficiency have contributed to the rise in on-site renewable energy by making solar energy systems, geothermal pumps, and small wind turbines more affordable to the average homeowner. Residential property owners may claim a tax credit of 30% of qualified expenditures for renewable energy systems that serve a dwelling unit owned and occupied by the taxpayer. There is no maximum to the 30% credit for systems installed beginning January 1, 2009. The tax credit is set to expire December 31, 2016. In addition, state legislation requires local utilities to make available to retail customers rebates for the installation of renewable energy sources. These rebates can have a substantial impact on the overall cost of a renewable energy system.

State Legislation Regarding Solar Energy Systems

The State of Missouri has both solar rights and solar easement legislation dating back to 1979. As stated in Missouri Revised Statutes Section 442.012, "the right to utilize solar energy is a property right." Additionally, Section 442.012 describes solar easements as permissible and subject to the same recording requirements as other easements. Such easements are considered negative easements and must be negotiated expressly between property owners.

In 2008, the voters in the State of Missouri adopted by initiative Proposition C, the Clean Energy Initiative, with nearly two-thirds of voters approving the initiative. Proposition C developed long-term renewable energy standards and benchmarks to help the State increase the production and use of renewable energy sources gradually over time. In addition, as stated in Missouri Revised Statutes Section 393.1030, Proposition C states that electric utilities shall "make available to its retail customers a standard rebate offer of at least two dollars per installed watt for new or expanded solar electric systems sited on customers' premises, up to a maximum of twenty-five kilowatts per system, that become operational after 2009." To implement Proposition C and create opportunities for utility companies to utilize renewable energy sources, the Code of State Regulations, in 4 CSR 240-20.100, allows customer-generators and electric utilities to enter into an interconnection agreement through which the utility may purchase electricity produced on site by the customer-generator.

Current Regulations in the City of Chesterfield

The City of Chesterfield Code currently permits solar panels in all residential and non-residential zoning districts. Today, solar energy systems require a municipal zoning approval (MZA), ensuring that the installation does not encroach on any setbacks or easements, and does not exceed the maximum building height. As of September 21, 2012, the City of Chesterfield has reviewed and approved four Municipal Zoning Approval applications for solar panel installations, two of which were located on residential properties.

In addition to zoning regulations currently in place for solar energy systems, there are also building, mechanical, plumbing, and electrical code regulations to ensure the safety and structural integrity.

The City of Chesterfield contracts with St. Louis County for the application and enforcement of these codes listed above and issuance and inspection of building permits.

- For roof-mounted installations, St. Louis County requires verification from an engineer that the roof can handle the additional dead load added to the roof, usually in the range of two to five pounds per square foot.
- The County's building and residential code also requires wind load verification, fire classification, proper pressure and temperature release valves, adequate flashing and sealing to prevent water, rodent and insect entry, installation in accordance with manufacturer's instructions, labeling of pertinent product information, protection from freezing, and access for inspection.
- Electric code requirements cover grounding, labels and markings, circuit requirements, overcurrent protection, means of disconnection, wiring methods, component interconnections, access to boxes, and storage batteries.
- For ground-mounted systems, County requires installation in accordance with manufacturer's instructions; and for ground-mounted systems ten feet in height or greater, verification from an engineer that the structure meets wind load requirements.
- In addition to a building permit, applicants must apply for and receive a permit for applicable electrical, mechanical, and plumbing work prior to commencing installation.

Neighboring Municipalities

In order to balance the growing desire for renewable energy with the health, safety, and welfare of the communities they serve, municipalities throughout the St. Louis Region have begun to explore regulatory options that restrict the use and placement of various renewable energy generation devices. In a review of 31 communities in St. Louis and St. Charles Counties, Staff identified seven municipalities that have enacted legislation in the last five years to regulate the use of renewable energy sources - Clayton, Clarkson Valley, Ellisville, Frontenac, O'Fallon, St. Peters, and Wentzville. While the regulations varied considerably, there was a common desire among all communities to support renewable energy sources while maintaining economic vitality, high quality aesthetics, and character. A detailed table, attached to this report as Appendix A, summarizes the requirements set forth in each of these municipalities' ordinances. An additional seven communities allow solar energy systems as either permitted, accessory, or conditional uses.

In addition to the review of legislation and municipal codes, Staff conducted follow-up telephone interviews with planning and building code enforcement staff at various municipalities to gain additional insight and background with regard to purpose of legislation, activities leading up to legislation, research and best practices reviewed, and reception and effectiveness of current legislation. The following vignettes provide information and insight into solar panel regulations from local municipalities and from other examples across the country.

City of O'Fallon. In 2011, the City of O'Fallon completed installation of a 104-panel solar array on the roof of the Street Division building, funded in large part through a Department of Energy grant. As a result of the installation and growing public interest for renewable energy sources, the city staff began to investigate an appropriate course for regulating the installation of wind turbines and solar energy systems throughout the city. With support and assistance from O'Fallon's Advisory Green Council, Planning Department Staff drafted a renewable energy ordinance to regulate solar, wind, and geothermal energy production, later adopted by the City Council in January, 2012.

The regulations for solar panels in residential districts describe renewable energy systems as accessory uses intended "to offset part or all of the customer-generator's own electrical energy requirements". Energy systems not intended for this purpose are to be considered principal uses. Solar energy systems on residential properties are subject to the following regulations:

General

- Setbacks and lot coverage requirements
- Glare requirements

Ground-Mounted

- Rear-yard only
- 15 ft. maximum height
- Utilities must be buried underground
- Landscaping required, no weeds or vegetation

Roof-Mounted

- If on pitched roof, must be flush or parallel to roof plane and no more than 8 inches higher than the surface
- Cannot exceed the roofline
- On flat roof, screening required
- Verification from certified engineer of weight of solar system and structural integrity of roof

Building-Integrated

- Building integrated photovoltaic systems may be located on any roof plane or wall

The City of O'Fallon has issued 12 permits for solar panel systems since the adoption of the Renewable Energy Ordinance in January 2012. These installations have been a mix of commercial and residential properties, and most projects have received vocal support from neighboring property owners.

The City of O'Fallon Renewable Energy Ordinance is included in the appendix of the report.

Clarkson Valley. In 2011, Clarkson Valley received an application for a roof-mounted solar energy system on the front elevation of a single family home. With safety and aesthetic concerns, the municipality imposed a moratorium on solar panels in order to first enact zoning and building code regulations governing solar energy systems. In addition to substantial building code requirements that incorporate siting and aesthetic considerations, the new regulations required a special use permit for all solar energy systems. The property owner then submitted an application for a special use permit, as required in the new regulations. The application was approved by the

Planning Commission and then, with considerable opposition from neighboring residents, was denied by the Board of Aldermen.

In response, the property owner filed suit against Clarkson Valley and the Missouri Public Service Commission (James Babb et al. v. Missouri Public Service Commission, et al., Case Number 12AC-CC00225). ***On June 29, 2012, the court ruled that the local ordinance was preempted by a state statute allowing property owners to enter into an agreement with a local electric utility company to install a solar energy system in order to participate in the solar rebate program.*** In addition, in light of "the review and approval of by Ameren Missouri of the plans and specifications for the Babbs' solar energy system in accord with 4 CSR 240-20.100, the favorable statement by the Monarch Fire Protection District, and the Planning & Zoning Commission's recommended approval," the Board of Aldermen's decision to deny the special use permit was considered "arbitrary, capricious, unreasonable, and an abuse of discretion". The court ordered Clarkson Valley to issue the property owner the building permit and the special use permit to begin installing the solar energy system.

The June 29, 2012 court ruling is included in the appendix of this report.

Pennsylvania Solar Energy Systems Model Ordinance. Developed by the Governor's Solar Working Group, the Pennsylvania Solar Energy Systems Model Ordinance provides a basic framework for local governments to "promote the use of solar energy and to provide for land planning, installation and construction of these systems subject to reasonable conditions that will protect the public health, safety, and welfare of the community." The model ordinance allows solar energy systems as an allowed accessory use in all districts and sets forth the following regulations:

General

- Solar energy systems shall comply with the Pennsylvania Uniform Construction Code.
- Design of solar energy systems shall conform to applicable industry standards.

Ground-mounted

- Ground-mounted systems must comply with all setback and height requirements for the zoning district in which they are installed.
- All exterior plumbing and/or electrical lines must be buried below the surface of the ground and be placed in a conduit.
- Ground-mounted systems must comply with accessory structure restrictions of the zoning district in which they are installed.

Roof-mounted

- A roof-mounted solar energy system must conform to the height regulations of the zoning district in which they are installed.
- The governing body may grant waivers of the height or setback requirements where such waivers will not present undue hardships on adjacent properties. Governing bodies shall also take into consideration support or opposition of adjacent property owners when granting waivers.

The Pennsylvania Solar Energy Systems Model Ordinance can be found on pages 12-14 of the following document:
http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/PA%20Energy/Solar%20Working%20Group/SolarMunicipalGuideFinal.pdf

Monroe County, PA Model Ordinance. In order to reduce the on-site consumption of utility-supplied energy while protecting the health, safety and welfare of adjacent and surrounding land uses, Monroe County developed a model ordinance for municipalities to regulate solar energy systems. More detailed than the Pennsylvania model ordinance, the Monroe County model ordinance permits solar energy systems in all districts as an accessory use and includes the following regulations:

Roof-mounted

- Roof-mounted systems may be mounted on principal or accessory structures and may not exceed the principal or accessory building height on which it is mounted.

Ground-mounted

- Ground-mounted systems may not exceed the maximum building height for accessory structures.
- Ground-mounted systems or systems attached to an accessory structure may not be located within the front yard.

General

- Minimum solar energy system setbacks shall be equivalent to the building setback or accessory building setback of the underlying zoning district.
- All mechanical equipment shall be screened from any property zoned residential or used for residential purposes.
- Solar panels shall be placed so as not to direct concentrated solar radiation or glare onto nearby properties or roadways.
- All power transmission lines from a ground-mounted system to any building or structure shall be located underground.
- Solar energy systems shall not be used to display any advertising, including signage, streamers, pennants, spinners, reflectors, ribbons, tinsels, balloons, flags, banners or any similar materials.
- A solar panel system shall not be constructed until a building/zoning permit has been approved and issued.
- The design of solar panel systems shall conform to all applicable industry standards.

The Monroe County, PA Model Ordinance can be accessed through the following link: http://www.co.monroe.pa.us/planning_records/lib/planning_records/planning/model_monroe_county_on-site_usage_of_solar_energy_systems.pdf

Columbia Law School Model Ordinance. The Center for Climate Change Law at Columbia Law School in New York City drafted a model ordinance for municipalities to regulate small scale solar energy systems. This model ordinance, which compiles language and sections from various ordinances from throughout the State of New York, is the most comprehensive ordinance of all the model ordinances reviewed and includes optional add-ons like solar panel fast tracking and zoning

for future solar access. Despite this level of detail in the ordinance, this model ordinance is very permissive of solar energy systems. The model ordinance includes the following components:

Building- and Roof-mounted

- Rooftop and building-mounted solar energy systems require building permits.
- Flush-mounted Photovoltaic Panels do not require building permits.
- Building heights shall not be applicable to solar energy systems "provided that such structures are erected only to a height as is reasonably necessary to accomplish the purpose for which they are intended to serve, and that such structures do not obstruct solar access to neighboring properties."
- Placement of solar collectors shall be allowed by right on flat roofs (except in historic districts) provided that they do not extend horizontally past the roofline.
- Building and roof-mounted systems shall meet New York's Uniform Fire Prevention and Building Code standards.

Ground-mounted

- Building permits required.
- Placement of solar energy systems meets all accessory structure setback requirements for the zoning district in which it is located.
- The height of the solar energy system shall not exceed twenty feet when oriented at maximum tilt.
- Solar energy equipment shall be located in a manner to reasonably minimize view blockage for surrounding properties and shading of property to the north.
- Ground-mounted systems shall be screened through architectural features, earth berms, landscaping, and other screening which will harmonize with the character of the property and surrounding area.

General

- Solar energy systems and equipment shall be permitted only if they are determined by the City not to present unreasonable safety risks including weight load, wind resistance, and emergency vehicle access.
- Installations in historic districts require a certificate of appropriateness from the historic commission if visible from the street.
- Installation must be performed by a qualified solar installer.
- Solar systems shall be maintained in good working order.
- Systems shall be removed if not in operation for more than 12 consecutive months.

The Columbia Law School Model Ordinance can be accessed online at the following link: http://web.law.columbia.edu/climate-change/resources/model-ordinances/model-small-scale-solar-siting-ordinance

Irvine, CA. The City of Irvine, California developed standards for installation of solar energy systems so as to encourage investment in solar energy on residential and non-residential properties while ensuring consistency with architectural and building standards of the City. Though minimal, the regulations for residential solar energy systems are clear and concise, leaving little room for interpretation by potential applicants. For residential properties, the City Code contains the following regulations:

Ground-mounted

- Ground-mounted systems shall not be located within front, rear, or side yard setbacks and shall not be located in the front yard area.
- Ground-mounted systems shall comply with all applicable height restrictions.

Roof-mounted

- Roof-mounted systems can be mounted at an optimum angle to the sun for the maximum energy production. The maximum height of a solar collector shall be two feet measured perpendicular to the face of the roof and shall not exceed the maximum overall building height.

General

- All solar energy system appurtenances shall be screened to the maximum extent possible without compromising the effectiveness of the system and shall be painted a color similar to the color of the surface on which they are mounted. All solar collectors shall be exempt from screening and color provisions.

Ashland, OR. While most of the examples provided below relate to siting considerations, a number of communities have also enacted legislation to protect solar rights and access to solar radiation. As stated in the City of Ashland, Oregon's Municipal Code, the purpose of solar access legislation is to "provide protection of a reasonable amount of sunlight from shade from structures and vegetation whenever feasible to all parcels in the City to preserve the economic value of solar radiation falling on structures, investments in solar energy systems, and the options for future uses of solar energy." The city's solar access legislation creates protections for property owners through the classification of lots based on north/south orientation and potential to collect solar energy and the issuance of permits for protection from shading by vegetation.

Each municipality or model ordinance addresses the regulation of solar energy systems in a manner consistent with themes and values relevant to the community (or model community) for whom they have been created. These ordinances cover common issues like setbacks, building and structure height, and yard requirements, ensuring solar panels are integrated into the character of the community as the valued and valuable assets they are intended to be.

Recommendation

The City of Chesterfield should adopt legislation that explicitly addresses solar energy to ensure that the public health, safety, and welfare of the community are protected. At a minimum, the basic standards of setbacks, yard location, and building height of solar energy systems should be specified. Additional development standards of landscaping, screening, glare, burial of transmission lines underground may provide aesthetic relief to adjacent property owners without limiting the property owner's ability to utilize a solar energy system.

Staff recommends drafting two ordinances, one to address the use of solar energy and the installation of solar energy structures on residential properties and a separate ordinance for non-residential properties. In the interest of time and due to the high volume of concerns and interest in the use of solar energy on residential properties, Staff recommends preparing this ordinance

first. If directed to do so, Staff recommends including the following general items in the ordinance:

1 Screening
2 Creation of applicable definitions
3 Glare
4 Yard requirements
5 Setback requirements
6 Height requirements
7 Building permit required (remember this then triggers St Louis County Review who already have electrical, structural and other standards in place as mentioned earlier in this report)
8 Maintenance of structure (property maintenance code review)

In addition, the DRAFT ordinance will establish the use of solar systems (which include solar panels) as structures. As structures, these systems will be required to obtain building permits, adhere to all structure requirements and will be reviewed against the architectural review standards in the City Code by Staff as all projects and applications currently are. The architectural review standards in the City Code already have an established review process in place for structures on residential property.

Staff is seeking direction on the next steps from the Planning and Public Works Committee. If directed to do so, Staff is prepared to have a DRAFT ordinance ready at the next Planning and Public Works Committee meeting for your review.

Appendix A: Review of local solar energy ordinance components and development criteria.

Municipality	Date Passed	Solar	Review Procedure	Administrative	Architectural review	General Regulations	Accessory Use	Setbacks	Lot Coverage	Glare	Advertisements	Abandonment / Disrepair	Ground-Mounted	Yard requirements	Structure Height	Utilities buried	Landscaping	Screening	Building-Mounted	Height	Elevation	Edge of Roof	Screening on flat roofs	Solar panel color	Screening of appurtenances	Exterior wiring color	Engineer Verification	Building-Integrated	Location on building	Exterior wiring color	Wind	Geothermal	Compost
Irvine, California		Y		-	-			Y	-	-	-	-		Y	Y	-	-	Y		y	-	-	-	-	Y	Y	-		-	-			
Monroe Co. Model		Y		-	-		Y	Y	Y	Y	-	Y		Y	Y	Y	-	Y		Y	-	Y	-	-	-	-	-		-	-			
PA Model Ord.		Y		-	-		Y	Y	-	-	-	-		-	Y	Y	-	-		Y	-	-	-	-	-	-	-		-	-			
Clayton	2/28/2012	Y		-	Y		Y	Y	Y	Y	-	-		Y	Y	-	-	Y		Y	Y	Y	Y	-	-	Y	-		Y	-			
Ellisville	5/20/2009			-	-		-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-		-	-		Y		
Frontenac	8/16/2011	Y		Y	Y			-	-	-	-	-		**Not permitted.**						Y	Y	Y	Y	Y	-	Y	-		Y	Y			
O'Fallon	1/26/2012	Y		-	-			Y	Y	Y	-	-		Y	Y	Y	Y	-		Y	-	-	Y	-	-	-	Y		Y	-		Y	Y	
St. Peters	5/24/2012	Y		Y	Y			Y	Y	Y	Y	Y		-	Y	Y	Y	-		-	Y	Y	Y	-	-	-	-		Y	-		Y		
Wentzville	8/24/2011	Y		-	-			-	-	-	-	-		**Not permitted.**						-	Y	Y	-	-	-	-	-		-	-		Y	Y	
Town & Country								**Town & Country held a Public Hearing on September 24, 2012 for proposed solar panel ordinance.**																										

" Y" is used to indicate presence of criteria or standard in ordinance.

" - " is used to indicate a lack of particular criteria or standard in ordinance.

CHAPTER 400: ZONING CODE

ARTICLE XX. RENEWABLE ENERGY

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.900: PURPOSE

The purpose of this Article is to balance the need for clean, renewable energy resources and the necessity to protect the public health, safety and welfare of the community. The City of O'Fallon finds these regulations are necessary to ensure that renewable energy systems are appropriately designed, sited, and installed. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.910: DEFINITIONS

As used in this Article, the following terms shall have these prescribed meanings:

ARRAY: A number of solar panels or modules connected together in a single structure. One (1) installation can have more than one (1) array.

BLADES: The aerodynamic surface of a wind energy system that catches the wind.

BRAKING: A method of overspeed control that utilizes a brake, which is applied mechanically, electrically, or hydraulically, to stop the rotor of a wind energy system in emergencies.

BUILDING-INTEGRATED PHOTOVOLTAIC SYSTEM (BIPV): Photovoltaic system used to replace traditional building materials in part of a building envelope, like awnings, roofs, facades, and sunrooms. PV shingle or tiles, PV laminates, and PV glazing are all examples of BIPV.

BUILDING-MOUNTED SMALL WIND ENERGY SYSTEM: A small wind energy system affixed to either a principal or accessory structure.

BUILDING-MOUNTED SOLAR ENERGY SYSTEM: A solar energy system affixed to either a principal or accessory structure.

DECORATIVE WIND ENERGY SYSTEM: A freestanding small wind energy system intended primarily for aesthetics. Small yard windmills or wind systems not exceeding fifteen (15) feet in height are considered decorative wind energy systems.

GEOTHERMAL OR GROUND-SOURCE HEAT-PUMP SYSTEM: A system for heating and/or cooling buildings using the earth's thermal properties in conjunction with electricity. This system may include open and closed loop systems.

GROUND-MOUNTED SOLAR ENERGY SYSTEM: A solar energy system that is not attached to another structure and is affixed to the ground.

MONOPOLE TOWER: A wind energy system tower consisting of a single pole, constructed without guyed wires and anchors.

PHOTOVOLTAIC (PV) SYSTEM: A solar energy system that converts sunlight into electrical energy.

RENEWABLE ENERGY SYSTEMS: Geothermal or ground-source heat-pump, solar energy, and small wind energy systems used to reduce on-site energy consumption.

ROOF-MOUNTED SOLAR ENERGY SYSTEM: A solar energy system affixed to the roof of either a principal or accessory structure.

SMALL WIND ENERGY SYSTEM: Any apparatus or equipment designed for the purpose of converting wind energy into electrical energy to reduce on-site consumption of utility power. This includes vertical-axis and horizontal-axis systems mounted on a building or a freestanding tower over fifteen (15) feet in height.

SOLAR ENERGY SYSTEM: Any apparatus or equipment designed for the purpose of collecting and transforming solar energy into thermal or electricity energy. Solar energy systems may include photovoltaic or solar-thermal systems.

SOLAR THERMAL SYSTEM: A solar energy system that uses sunlight to produce heat that is used for water heating or space heating or cooling.

TOWER: The vertical component of a wind energy system that elevates the wind turbine generator and attached blades above the ground. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.920: GENERAL PROVISIONS

A. *Accessory Uses.* Renewable energy systems intended primarily to offset part or all of the customer-generator's own electrical energy requirements shall be an accessory use subject to the provisions of this Article. All other renewable energy systems are considered a principal use.

B. *Lot Location.* All renewable energy systems shall be located on the same lot as the principal use.

C. *Building Permit.* It shall be unlawful for any renewable energy system to be constructed, erected, and/or installed without a building permit. Renewable energy systems shall comply with all applicable Building, Mechanical, Plumbing, and Electrical Codes adopted by or applicable to the City of O'Fallon. A building permit fee shall be fifty dollars ($50.00) for systems installed on residential property and one hundred dollars ($100.00) for commercial or industrial properties.

D. *Approval By Planning And Development Department.* Geothermal energy systems and roof-mounted solar energy systems may be approved by the Planning and Development Department in accordance with this Article by the issuance of a building permit. Ground-mounted solar energy systems constructed or installed to serve a single-family home, mobile home, and multi-family structure containing four (4) or less dwelling units may also be approved by the Planning and Development Department.

E. *Conditional Use Permit.* The issuance of a conditional use permit is required for any small wind

energy system or renewable energy system not intended primarily to offset part or all of the customer-generator's own electrical energy requirements.

F. *Site Plan Approval.* Site plan approval is required for all small wind energy system towers, ground-mounted solar energy systems not subject to approval by the Planning and Development Department as provided above, and renewable energy systems not intended primarily to offset part or all of the customer-generator's own electrical energy requirements.

G. *Federal And State Compliance.* All renewable energy systems shall meet or exceed State and Federal standards and regulations in force at the time of installation. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.930: SOLAR ENERGY SYSTEMS

A. *General Requirements.* The provisions of this Section apply to the construction and/or installation of all solar energy systems:

1. *Glare.* All facilities shall comply with the performance standards set forth in Section 400.550 of this Code of Ordinances.

2. *Setbacks and lot coverage.* Solar energy systems must comply with all setback and lot coverage requirements for the zoning district in which the property is located.

B. *Ground-Mounted Solar Energy Systems.*

1. *Yard requirement.* Ground-mounted energy solar systems shall only be located in the rear yard of any zoning district. Solar carports may be permitted in any off-street parking area in commercial or industrial properties, and on residential properties in compliance with Section 400.275 of this Code of Ordinances.

2. *Height requirement.* Ground-mounted solar energy systems may not exceed the maximum height of the principal structure on the property. In any event, ground-mounted solar energy systems may not exceed fifteen (15) feet in height in any residential zoning district.

3. *Underground utilities.* All exterior electrical and/or plumbing lines must be buried below the surface of the ground in accordance with the current Electrical and Plumbing Codes adopted by the City.

4. *Maintenance.* All ground-mounted systems shall be well maintained underneath the array with the installation of mulch, chat, rocks, or other attractive materials. No weeds or other vegetation around the ground-mounted system shall be in violation of Section 220.100.

C. *Roof-Mounted Solar Energy Systems.*

1. *Mounting on pitched roofs.* Solar arrays shall be permitted on any pitched roof if panels are mounted flush or parallel to the roof plane. Parallel mounting shall be placed no more than eight (8) inches higher than the roof surface. Any mounting of a solar array with a different pitch than the roof plane shall require a conditional use permit. Mounted solar arrays shall not exceed the height of the roofline.

2. *Mounting on flat roofs.* Solar arrays on flat roofs shall be screened in accordance to Section 400.278 of this Code of Ordinances.

3. *Written analysis.* The applicant must submit a written certification from a Missouri licensed structural engineer providing details of the weight of each panel or array per square foot and certifying that the supporting structure has the structural integrity to carry the weight and wind loads of the solar energy system.

4. *Building-integrated photovoltaic (BIPV) systems.* Building-integrated photovoltaic systems may locate on any roof plane or wall. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.940: APPLICATION REQUIREMENTS FOR SOLAR ENERGY SYSTEMS

A. A completed building permit with all the applicable electrical, plumbing, and structural engineering information and drawings.

B. A licensed Missouri engineer seal for any applicable set of plans.

C. A plot plan illustrating the following features for roof-mounted solar energy systems:

1. North arrow and bar scale.

2. Roof dimensions.

3. Show all ridge line and/or parapets for roof-mounted solar energy systems.

4. Identify all vents, chimneys, or other apparatus, including vertical objects (i.e., trees), that may affect the placement of the panel.

5. Provide details of the overall size of the panel array and the arrangement of the array.

D. A plot plan illustrating the following features for ground-mounted solar energy systems:

1. North arrow and bar scale.

2. Lot dimensions.

3. Identify all streets adjacent to lot.

4. Identify easements and setbacks.

5. Provide details of solar unit's maximum height from grade and overall size of panel array, and any screening details (vegetation, fencing, etc.).

6. Provide distances from existing structures, trees, fences, and adjacent property lines.

E. Provide detailed drawings of support structures or footings where applicable.

F. A picture showing the sample colors for the proposed solar energy system and the structure's roof material.

G. A copy of the design approval letter from the utility company shall be submitted for customers requesting to interconnect to the utility company's electrical grid. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.950: GEOTHERMAL SYSTEMS

A. *Setback Requirements.* Drilling and trenching for geothermal heat pump systems shall be prohibited on any easement.

B. *State Requirements.* All geothermal heat pump systems shall comply with the Missouri Department of Natural Resource regulations established in 10 CSR 23 (Heat Pump Construction Codes). (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.955: APPLICATION REQUIREMENTS FOR GEOTHERMAL SYSTEMS

A. A completed building permit with all the applicable electrical and mechanical engineering information and drawings.

B. A plot plan illustrating the location of all geothermal systems:

1. North arrow and bar scale.

2. Lot dimensions.

3. Identify easements and setbacks.

4. Provide details of the location of all geothermal apparatus. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.960: SMALL WIND ENERGY SYSTEMS

A. *General Requirements.* The provisions of this Section apply to the construction and/or installation of all small wind energy systems:

1. *Location.* All wind energy systems shall be located in the rear yard on a lot.

2. *Electrical wires.* All electrical wires associated with a wind energy system must be buried below the surface of the ground, except for those wires necessary to connect the wind generator to

the tower wiring, the tower wiring to the disconnect junction box, and the grounding wires, in accordance to the current Electrical Code adopted by the City.

3. *Controls and brakes.* All systems shall contain an internal governor or braking device which engages at a manufacturer-specified wind speed intended to ensure the safe operation of the system in all wind conditions.

4. *Lighting.* Wind energy conversion systems shall not be illuminated by artificial means, except where the illumination is specifically required by the Federal Aviation Administration or other Federal, State, or local regulations.

5. *Colors.* Wind turbines shall be painted a non-reflective, non-obtrusive color such as the manufacturer's default color option or a color that conforms to the environment and architecture of the area in which it is located.

6. *Noise.* The noise emitted from any wind turbine shall comply with Section 400.555 and Section 215.237 of this Code of Ordinances.

7. *Signage.* Signs shall be limited to the manufacturer's or installer's identification, and required warning signs (e.g., electrical hazard or high voltage) placed on the wind turbine tower(s), electrical equipment, and the wind turbine. Commercial advertising is strictly prohibited.

B. *Building-Mounted Wind Energy Systems.*

1. *Allowed structures.* Building-mounted wind energy systems shall only be allowed on non-residential structures.

2. *Height requirements.* No building-mounted wind energy system shall exceed the height requirement for zoning district in which it is located.

3. *Written analysis.* A written certification from a Missouri licensed structural engineer regarding the weight of the total installation per square foot and certifying that the structure has the structural integrity to carry the weight and wind loads of the wind energy conversion system and have minimal vibration impacts on the structure.

C. *Decorative Wind Energy Systems.*

1. *Requirements.* Decorative wind energy systems shall be permitted in any yard without a building permit.

D. *Small Wind Energy System Towers.*

1. *Monopole tower.* Monopole wind energy systems shall be conditionally permitted in commercial and industrial zoning districts. Monopole structures shall be prohibited in all residential zoning districts and the Mixed-Use Traditional Development District (MUTDD), unless located in a property used solely for a non-residential use (such as religious institutions, schools, fire stations, libraries, utility substations, cemeteries, parks, golf courses, etc.).

2. *Guyed and lattice towers.* Guyed and lattice towers shall only be permitted in industrial zoning districts.

3. *Number of towers per lot.* No more than two (2) ground-mounted wind energy systems that

supplement energy consumption may be installed on any lot.

4. *Rotor distance.* The minimum distance between the ground and any part of the rotor blade system shall be fifteen (15) feet.

5. *Height and setback requirements.* The setbacks listed below shall apply to all adjacent property and utility lines.

DISTRICTS	MAX. HEIGHT	MIN. SETBACK	TOWER DESIGN PERMITTED
Non-residential uses in "R-1", "R-1A", "R-1B", "R-2", "R-3", "R-4", "R-5", "TGB" and "MUTDD"	75 feet	One (1) foot of setback for each foot of height of a freestanding tower in motion plus ten (10) feet when adjacent to residential uses or zoned property.	Monopole
"C-O", "C-1", "C-2", "C-3", "SC-1", "HTCD", "AG" and "P-R"	125 feet		Monopole
"I-1" and "I-2"	150 feet		Monopole, guyed-wire, latice

(Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.970: APPLICATION REQUIREMENTS FOR SMALL WIND ENERGY SYSTEMS

A. A completed building permit with all the required electrical and structural engineering information and drawings.

B. A set of standard drawings (twenty-four (24) inches by thirty-six (36) inches) of the wind turbine structure and stamped engineered drawing of the tower, base, footings, and/or foundation as provided by the manufacturer.

C. Written, technical report from a licensed professional engineer that the wind energy system meets all applicable local, State, and Federal regulations.

D. A description of the safety precautions provided in order to ensure that the structure will not be detrimental to adjacent properties in the case of high winds and/or if the unit fails.

E. Color photo simulations showing the proposed site of the wind energy system with a photo-realistic representation as it would appear viewed from all sides of site. The color photo simulations shall show the proposed wind energy system and all proposed landscaping, fencing and other methods of screening.

F. A copy of the design approval letter from the utility company shall be submitted for customers requesting to interconnect to the utility company's electrical grid.

G. A plot plan illustrating the following features for wind small energy system towers:

1. North arrow and bar scale.

2. Lot dimension.

3. Location, dimensions, and types of existing major structures on the property.

4. Location of the proposed wind system tower.

5. Identify all streets adjacent to the lot.

6. The setback distances and required fall line distance from adjacent properties.

7. Identify all easement and any overhead utility lines.

8. Provide distances from existing structures, trees, fences, and adjacent property lines.

9. Tower blueprints or drawings, including foundation drawing.

H. A plot plan illustrating the following features for building-mounting small wind energy systems:

1. North arrow and bar scale.

2. Lot dimensions.

3. Location, dimensions, and types of existing major structures on the property.

4. Location of the proposed wind system tower.

5. Identify all streets adjacent to the lot.

6. Identify all easement and any overhead utility lines. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.980: APPLICABILITY

A. This Article applies to renewable energy systems to be installed and constructed after the effective date of the Article.

B. Except as specified below, renewable energy systems constructed prior to the effective date of this Article shall not be required to meet the requirements of this Article.

C. Any upgrades, modifications or changes that materially alter the size or placement of an existing renewable energy systems shall comply with the provisions of this Chapter. (Ord. No. 5763 §1, 1-26-12)

ARTICLE XX. RENEWABLE ENERGY

SECTION 400.990: ABANDONMENT

Any system that is out of service for a continuous period of twelve (12) months will be considered abandoned and must be removed within ninety (90) days. If such system is not removed within ninety (90)

days, the City may remove such system at the owner's expense after giving the owner notice and an opportunity to be heard with respect to removal. (Ord. No. 5763 §1, 1-26-12)

IN THE CIRCUIT COURT
COLE COUNTY, MISSOURI

JAMES BABB et al.	)	
	)	
PETITIONERS,	)	
	)	
V.	)	Case No. 12AC-CC00225
	)	
MISSOURI PUBLIC SERVICE COMMISSION, et al.,	)	
	)	
	)	
RESPONDENTS	)	

FINDINGS OF FACT,
CONCLUSIONS OF LAW,
JUDGMENT AND ORDER

Having read the motions and briefs submitted by the parties, and being fully advised in these premises, the Court enters this Judgment in favor of Petitioners and against the Respondents in accordance with the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. On November 4, 2008, Missouri voters approved Proposition C, the "Renewable Energy Standard Act," which is codified at §§ 393.1020 – 393.1030, RSMo.

2. The Missouri Public Service Commission ("Commission") promulgated 4 CSR 240-20.100, in part, under the authority in § 393.1030, RSMo.

3. 4 CSR 240-20.100 enacts a comprehensive regulatory scheme which imposes requirements on electric utilities in order to comply with the renewable energy portfolio standards in §§ 393.1020 – 393.1030, RSMo.

4. 4 CSR 240-20.100(4) imposes a comprehensive regulatory scheme that requires, *inter alia*, an electric utility to provide for retail account holders to enter into a contract to install a residential solar electric systems to participate in a solar rebate program. The rule states,

"These rebates shall be available to Missouri electric utility retail account holders who install new or expanded solar electric systems that become operational after December 31, 2009."

5. 10 CSR 240-20.100(4) imposes significant design, operational, safety and technological requirements on such solar energy generating systems.

6. On September 9, 2011, James and Frances Babb ("the Babbs") submitted an Interconnection Application/Agreement for Net Metering System, along with the design of a residential solar energy system, to Ameren Missouri.

7. On October 12, 2011, Ameren Missouri notified the Babbs that it approved their proposed plans and specifications for the proposed solar energy system to be installed at their property at 2001 Kehrsdale Court, Clarkson Valley, Missouri.

8. On November 1, 2011, the Babbs submitted an application for a Building Permit to the City of Clarkson Valley, Missouri ("the City") for the installation of the Ameren Missouri-approved solar generating equipment on the Babbs' property.

9. The Babbs' November 1, 2011 Building Permit application was approved by their homeowners' association.

10. As of November 1, 2011, the City's Municipal Code did not contain any provisions to require a person to apply for and obtain a Special Use Permit prior to the installation of residential solar energy generating equipment.

11. As of November 1, 2011, the City's Municipal Code did not contain any provisions which imposed any requirements on the installation or operation of solar energy systems at residential one-family dwellings.

12. The City delayed action on the Babb's application, and on January 3, 2012, the City amended its Municipal Code by adopting Section M2300 and § 405.120.B.15.

13. On January 5, 2012, without withdrawing their November 1, 2011 application for a Building Permit, the Babbs submitted an application for a Special Use Permit pursuant to § 405.120.B.15.

14. On January 31, 2012, the Monarch Fire Protection District advised the Babbs that the Monarch Fire Protection District had no objections or concerns with the installation of their proposed solar generating equipment as long as the Babbs complied with §§ 605.11 to 605.11.4 of the 2012 International Fire Code.

15. On February 3, 2012, the City's Planning and Zoning Commission met to review the Babb's application for a Special Use Permit, and voted to recommend approval of the Babb's application for a Special Use Permit.

16. On February 9, 2012, the Babbs entered into a contract with Ameren Missouri for the sale of Solar Renewable Energy Credits for a five-year period from the customer-owned solar energy equipment on their property. The contract obligates the Babbs to have their solar system operation by August 7, 2012.

17. On March 6, 2012, the City's Board of Aldermen denied the Babbs' application for a Special Use Permit.

18. The City has not taken any action on the Babbs' November 1, 2011 application for a building permit.

CONCLUSIONS OF LAW

19. In accordance with §§ 536.050 and 536.150, RSMo., *McCracken v. Wal-Mart Stores East, Lp*, 298 S.W.3d 473 (Mo. banc 2009) and *J.C.W. ex rel. Webb v. Wyciskalla*, 275 S.W.3d 249 (Mo. 2009), the Court has subject matter jurisdiction over this matter, and the Petitioners are not required to first present their claims to the Commission.

20. This action is timely filed in a reasonable time in accordance with § 536.150, RSMo because it is a noncontested case and there is no statute or rule which imposes any time limit on filing such an action.

21. Although § 405.160 of the City's Municipal Code addresses appeals to the Board of Adjustment from decisions of the building commissioner, that ordinance does not apply here because the decision denying the Special Use Permit was made by the Board of Aldermen and not the building commissioner.

22. Complete relief can be afforded those already parties to this action, and there are no necessary or indispensable parties who are not present in this action who have any legally protectable interest that is impaired or impeded in their absence.

23. The provisions in the City's Section M2300 ordinance impose requirements that are more restrictive than, inconsistent with, and in conflict with the requirements in 4 CSR 240-20.100.

24. 4 CSR 240-20.100 does not contain any provision requiring any pre-approval by a local government prior to installing a solar energy system subject to 4 CSR 240-20.100.

25. The pre-approval requirement in § 405.120.B.15 in which persons seeking to install a solar energy system at a residential one-family dwelling must obtain a Special Use Permit from the City's Board of Aldermen creates an unlawful condition precedent that is inconsistent and in conflict with 4 CSR 240-20.100.

26. The operative effect of Section M2300 and § 405.120.B.15 on the Babbs, who have a contract with Ameren Missouri to install a solar energy generating system in order to participate in the solar rebate program, is to prohibit an activity that is authorized by 4 CSR 240-20.100.

27. Section M2300 and § 405.120.B.15 are preempted by 4 CSR 240-20.100 with respect to the Babbs because they are persons having a contract with an electric utility to install a solar energy system in order to participate in the solar rebate program. *See Page Western, Inc. v. Community Fire Protection District*, 636 S.W.2d 65, 67 (Mo. banc 1982), *City of Dellwood v. Twyford*, 912 S.W.2d 58 (Mo. banc 1995), or *St. Charles County Ambulance District. v. Town of Dardenne Prairie*, 39 S.W.3d 67 (Mo. App. E.D. 2001).

28. The City cannot lawfully impose the requirements in Section M2300 and § 405.120.B.15 on the Babbs' application and their solar energy system.

29. Section M2300.C.3 does not provide a basis to deny the Babbs' permit applications because that ordinance is preempted and unenforceable against the Babbs.

30. Section 1505.1, including Table 1505.1, footnote (b) in the International Building Code, 2009, is not applicable and does not serve as a basis to deny the Babbs' permit applications.

31. The City's March 6, 2012 decision denying the Babbs' application for a special use permit effectively serves to prohibit the Babbs from conducting an activity that is otherwise authorized by 4 CSR 240-20.100.

32. The City's March 6, 2012 decision denying the Babbs' application for a special use permit was in disregard of the relevant facts and circumstances including, but not limited to, the review and approval by Ameren Missouri for the plans and specifications of the Babbs' solar energy system in accord with 4 CSR 240-20.100, the favorable statement by the Monarch Fire Protection District, and the Planning & Zoning Commission's recommended approval.

33. There is no reasonable basis to deny the Babbs' application for a Special Use Permit, and the City's denial was arbitrary, capricious, unreasonable and an abuse of discretion.

34. Section 442.012.1, RSMo confers a legally protectable right to the Babbs to use solar energy at their property, and they have a legally protectable right to participate in the solar rebate program authorized by 4 CSR 240-20.100(4).

35. The City's refusal, without any legal justification, to issue permits is preventing the Babbs from using the solar energy at their property and from participating in the solar rebate program.

36. Other than Table 1505.1, footnote (b) of the International Building Code, 2009, (which is not applicable) and the 6 inch limitation in Section M2300.C.2 (which is preempted), the City has not shown any other regulatory or Code provision with which the Babb's permit applications do not comply; therefore, the Court concludes the Babbs' solar project complies with all applicable regulatory and Code requirements.

37. The City has a ministerial duty to issue the permits and the City has failed to perform its ministerial duty.

38. The Court has inherent equitable powers, including equitable power under § 527.080, RSMo., and Rule 87.10, to grant "further relief ... whenever necessary or proper" to ensure justice is properly administered.

39. Because the Trustees of the Kehrs Mill Estates Residents Association are not parties to this case, they have no standing to file an affidavit in the case.

JUDGMENT AND ORDER

For the foregoing reasons, the Court sustains Petitioners' motion for summary judgment on Count I and Count III; sustains Petitioners' motion to strike the affidavit proffered by the Trustees of the Kehrs Mill Estates Residents Association; and denies all other pending motions.

The Court hereby enters JUDGMENT in favor of Petitioners on Counts I and III. Respondent-City of Clarkson Valley is ordered to issue to Petitioners-James Babb and Frances

Babb a building permit and special use permit in accordance with their applications for same. Further, based on the equitable considerations, in the event Respondent-City of Clarkson Valley fails to issue said permits within one (1) business day of the entry of this Judgment and Order, Petitioners-James and Frances Babb are authorized to construct the solar energy system at their property in accordance with all applicable regulatory requirements as if such permits were issued.

JUDGMENT SO ENTERED this 29 day of June 2012.

Daniel Green
Circuit Judge

Copy to: Counsel of Record

JOINT EXHIBIT 1 ADMITTED

IN THE CIRCUIT COURT
COLE COUNTY, MISSOURI

JAMES BABB et al.	)	
	)	
PETITIONERS,	)	
	)	
V.	)	Case No. 12AC-CC00225
	)	
MISSOURI PUBLIC SERVICE COMMISSION, et al.,	)	
	)	
	)	
RESPONDENTS	)	

STIPULATION

COME NOW the parties, by and through counsel, and mutually agree, consent and stipulate as to the admissibility as to the following:

1. The Court may take judicial notice of:
   - A. International Building Code, 2009;
   - B. International Fire Code, 2003;
   - C. International Fire Code, 2009;
   - D. International Residential Code for One and Two Family Dwellings, 2009;
   - D. 4 CSR 240-20.100;
   - E. Monarch Fire Protection District, Ordinance 31;
2. City of Clarkson Valley, Missouri, Ordinance No. 11-02;
3. The City of Clarkson Valley, Missouri Municipal Code, dated May 22, 2012; and
4. The application for a building permit submitted by Petitioners-Babbs on November 1, 2011.

442.012 Property RIGHT

393.1030 PROP C Rebates

5. The parties acknowledge and agree that copies of separate and individual provisions or portions of any of the foregoing are admissible without the necessity of introducing the entire Code, Ordinance or document.

For All Petitioners

Date: 26 June 2012

For City of Clarkson Valley, Missouri

Date: 6/26/12

For Missouri Public Service Commission

Rachel M Lewis

Date: 6/26/2012

Appendix D: Sample Images of Residential Solar Energy Systems