

# **Green Building / Rooftop Solar Program Evaluation & Best Practices**

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for Anthony Floyd

Green Building Program

Office of Environmental Initiatives – Advanced Planning

City of Scottsdale

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# Purpose

## Exploring leading Green Building and Rooftop Solar Programs to identify best practices and improve competitiveness of the Scottsdale initiatives

### ***Green Building Program:***

- voluntary or mandatory requirements for new construction or remodeling of residential and commercial buildings, with performance guidelines for energy, water, and material usage of building construction and operation.

### ***Rooftop Solar Program:***

- program for encouraging home owners and developers to engage in residential and commercial photovoltaic solar projects, in new construction or retrofitting.



## Green Building

- Researched Green Building Programs in USA
- Identified relevant Best Practices documents

## Rooftop Solar

- Researched Rooftop PV Programs in USA
- Identified 4 current Best Practices documents
  - Minimizing Overlap in PV System Approval Processes
  - Simplifying the Solar Permitting Process
  - California Solar Permitting Guidebook
  - emPower Arizona Energy Assessment



# Scottsdale's Green Building Program

- Premier Green Building Programs
- Why so successful?
- Lessons learned and future implications



# History / Overview

- Officially established in 1998
- Rating criteria based on characteristics of the Sonoran Bioregion
- Integrated with the city's existing development process to assist with building permits, reviews, and inspections
- Site use, energy, building materials, indoor air quality, solid waste and water usage
- Green Building Advisory Committee
- LEED, IgCC



# Benefits

- Expedited building plan review and process assistance
- Differentiated developers in the market
- Increased public involvement, education, and community involvement



# Success Attributes

- “Going Beyond Code” Keys to Success
  - 1) Clear Goals
  - 2) Community Wide Assessment and Planning
  - 3) Stake Holders in Decision Process
  - 4) Implementation and Integration**
  - 5) Incentives**
  - 6) Communication and Partnerships



# Current State and Future Impact

- Scaled down due to economic downturn, budget cuts
- *Towards Advanced Solutions for Achieving Sustainability Goals in Buildings: Lessons Learned from Case Studies* by American Society of Civil Engineers
  - Largest Impact falls on planning and doing in phases
  - Integrated design & stakeholder collaboration are key
  - Success based on acquisition & accumulation of knowledge
- Has accomplished goal of offering lessons learned





# Green Vision

- Scaled
- Fdfdf
- Fdfdfd
- fdfdfd





# PII of Soft BoS

- PV Balance of System (BoS) Soft Costs for residential systems.
- 18,000+ U.S. municipalities set their own solar permitting requirements
- Inefficient The Interstate permitting adds \$1-2K in cost.



# Simplifying solar permitting process

- Nine Residential Solar Permitting Best Practices:
  - Post Requirements Online
  - Implement an Expedited Permit Process
  - Enable Online Permit Processing (Scottsdale)
  - Ensure a Fast Turn Around Time (Scottsdale)
  - Collect Reasonable Permitting Fees
  - Do Not Require Community-Specific Licenses
  - Offer a Narrow Inspection Appointment Window
  - Eliminate Excessive Inspections (Scottsdale)
  - Train Permitting Staff in Solar



# California Solar Permitting Guidebook

- Streamlining Small PV Installations
- PV Toolkit for Expedited Permitting
  - Submittal Requirements Bulletin
  - Eligible Checklist for Expedited Permitting
  - Standard Plan – central inverters
  - Standard Plan – micro-inverters
  - Structural Criteria for Flush Mounted Arrays
  - Plan Review & Inspection Guide



# Minimizing Overlap in PV Approvals

- Installers must get customers, line up financing, and **navigate multiple approval processes BEFORE** installing rooftop systems:
  - obtaining interconnection agreement from the utility
  - securing a building/electrical permit from local gov.
  - obtaining historic district approval
  - enrolling in a net metering program
  - applying for state or local rebates/incentives
- We **must speed up** review/approval processes

# emPower Arizona



- Arizona faces 3 solar challenges:
  - decreasing demand (utilities ahead of goals)
  - financing (not at grid-parity)
  - restricted export (transmission infrastructure near capacity)
- Likely little solar demand from utilities
- Grid-parity targeted at \$0.09/kWh in 10 yrs







# Solar Vision



- Energy policies will require more renewables
- Solar will become most cost-effective renewable
- Distributed PV solar will dominate all renewables
- The Valley of the Sun will become a solar center
- Scottsdale has space and resources (1/2 pop. density of Phoenix)





# Why Solar here?



- Desert conditions (sun/heat/water)
  - Best solar conditions in USA
  - Fresh Water \$ ↑
  - Grid Electricity \$ ↑
  - Installed Solar \$ ↓
1. Runs on unlimited, free sunshine
  2. Uses zero water
  3. Provides cooling shade
  4. Is efficient on micro-grid scale





Good for business  
Good for your customer  
Good for the environment



# Recommendation

- You do many things right and early
- Reduce, Simplify, Eliminate (paperwork, fees)
- Be daring (represent your residents/businesses)
  - Negotiate better deals
  - Offer more incentives (to live, work, build)
  - Facilitate rebates, tax credits, incentives
  - Support local sourcing
  - Help finance projects (make local SolarCity)
- Become a troubleshooter
  - planning, financing, design, engineering, permitting, procurement, construction/installation, service, maintenance, operation

