



City of Golden

Theresa Worsham



About Golden

- Relatively small community: ~18,000 pop.
- Building Department – 4 FTEs
- About 8 solar installers
- Using the 2008 International Codes; soon to adopt 2012.
- Limited resources: staffing, software, time with contractors.



Golden's Renewable Goals

To increase our community's energy efficiency and our use of renewable sources of energy.

Reduce overall community energy usage in Golden by 20% and increase to 20% the proportion of its energy use derived from renewable energy sources within ten years.

Most Viable Option: Solar



Key Issues



Contractor Confusion

Key Issues

**Fire
codes**

**Wind
speed**

**Dead
loads**

Interpretation

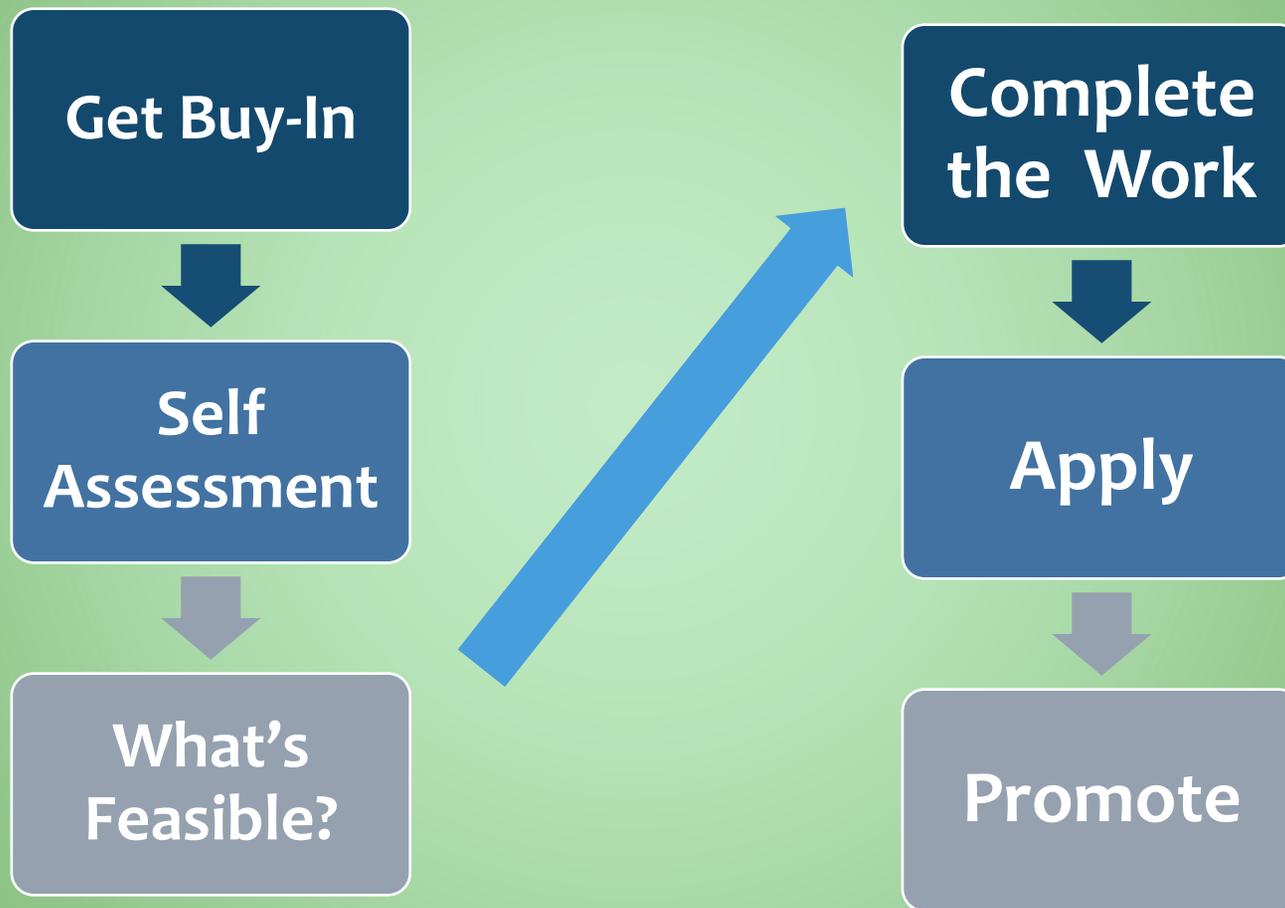
Regional Differences

Key Issues



Budget Accountability

Golden's Adoption Process

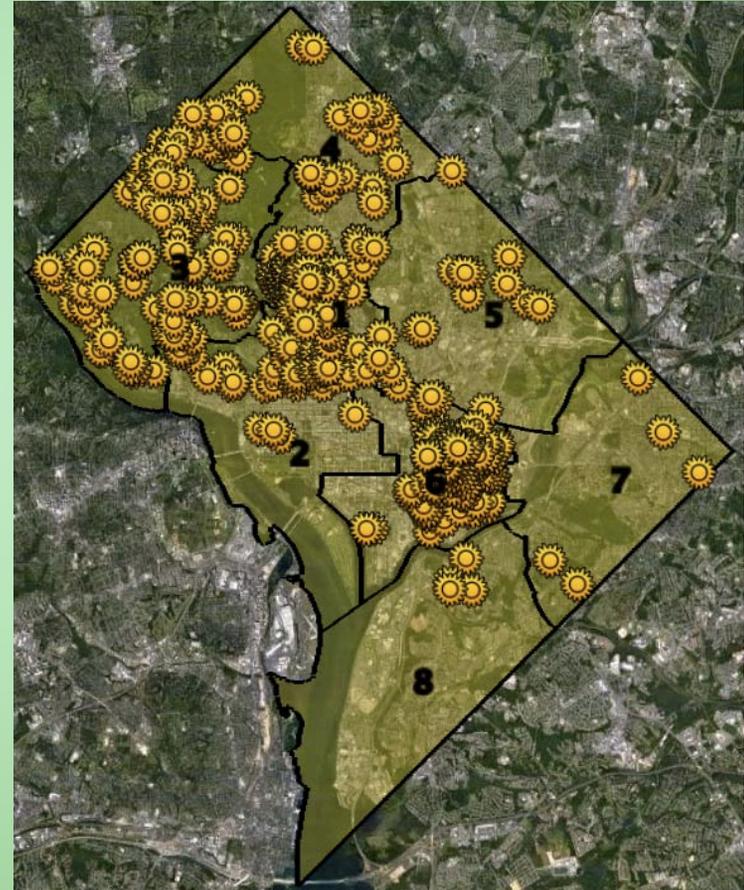


Sustainability Benefits

A Custom Approach

**Solar Mapping by
Neighborhood**

**Stepping Stone to
Other Efforts**



Economic Benefits

**Fiscal
Responsibility**

**Economic
Development**



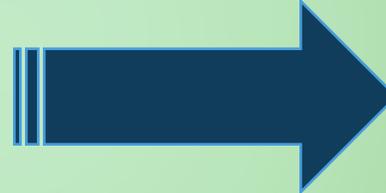
**Energy
Independence**

Benefits for Owners

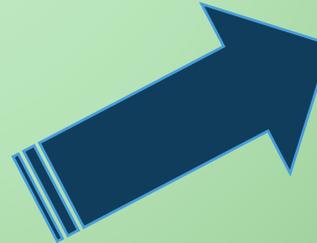
Cost Benefit



Reduces Payback



Transparent Process



Other Benefits

Being at the
forefront

Evolving Codes

Steps toward
standardization

Trend your
Data

Small Town
Resources

Lessons Learned



Start With A Sit-Down

Cherry Pick The Easiest

Talk To Your Contractors



Questions?

Theresa Worsham
Sustainability Manager

(303) 384-8117

tworsham@cityofgolden.net





Boulder
County

Boulder County BuildSmart





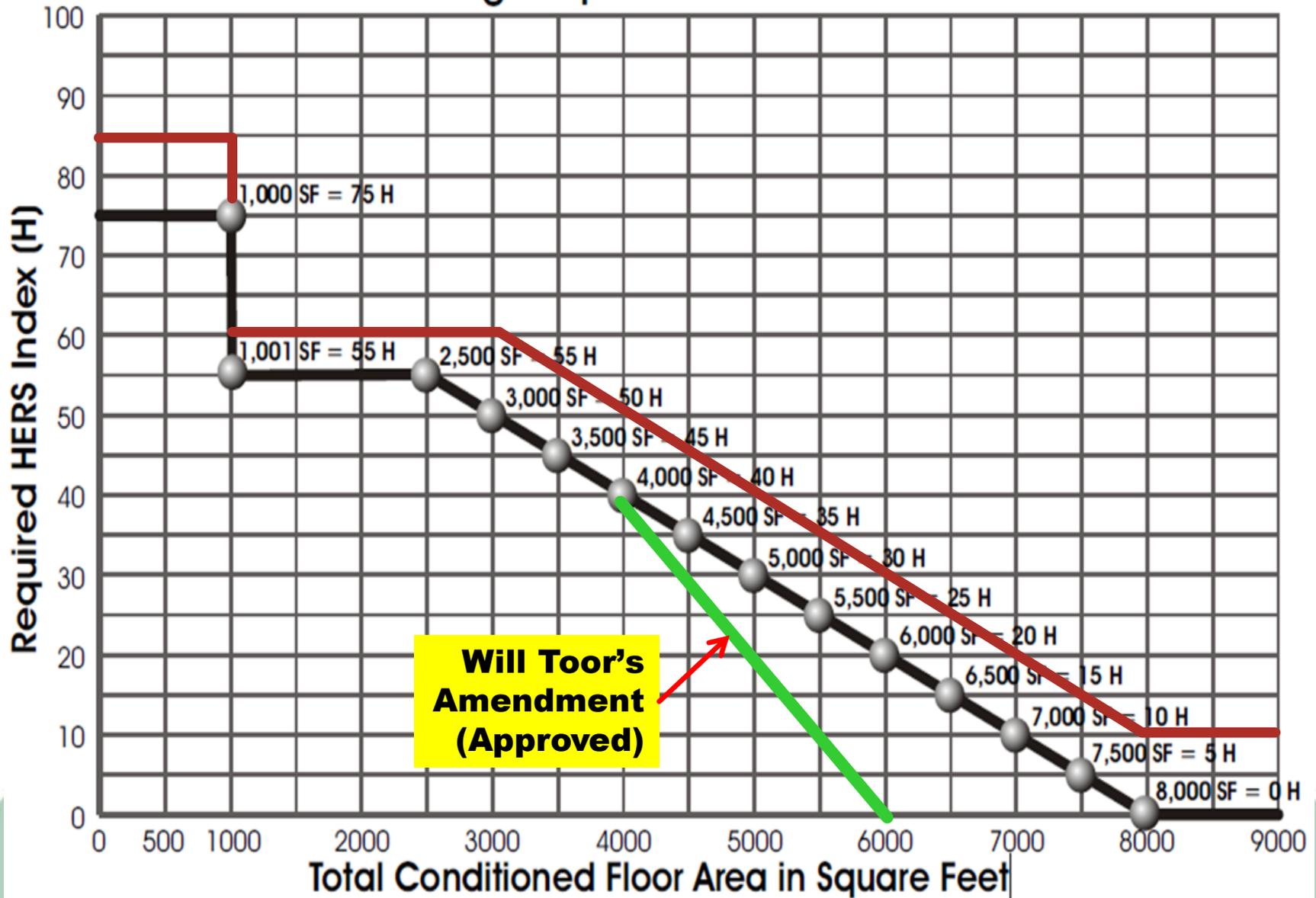
Commissioners' Initiatives

- **Collaboration:** To provide enhanced services through cooperative work within the County and with external partners.
- **Public Service:** To motivate us all to provide the best in public service.
- **Sustainability:** To ensure that Boulder County's operations and decision-making processes reflect our deep commitment to sustainability and to build partnerships to help make the broader community more sustainable.

Boulder County Land Use Department

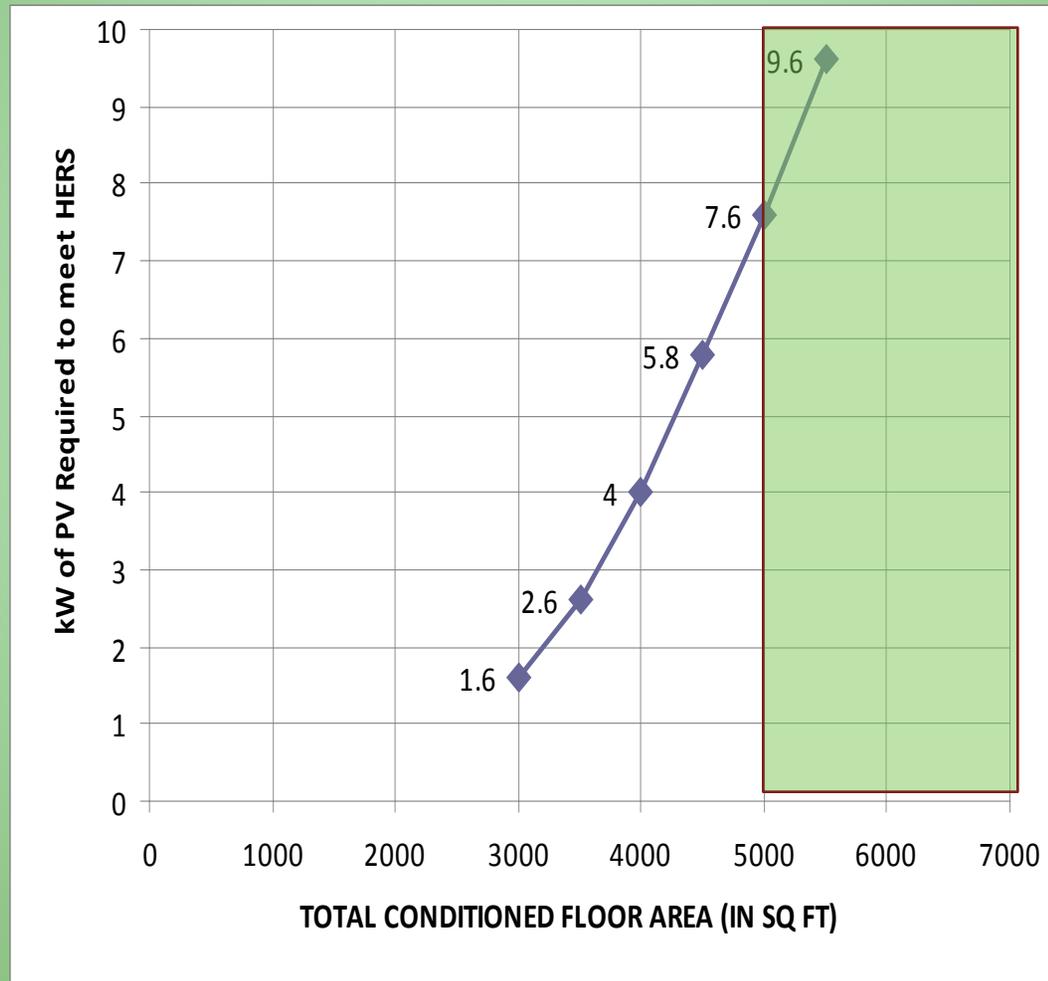


Table 1 HERS Rating Requirements for New Construction



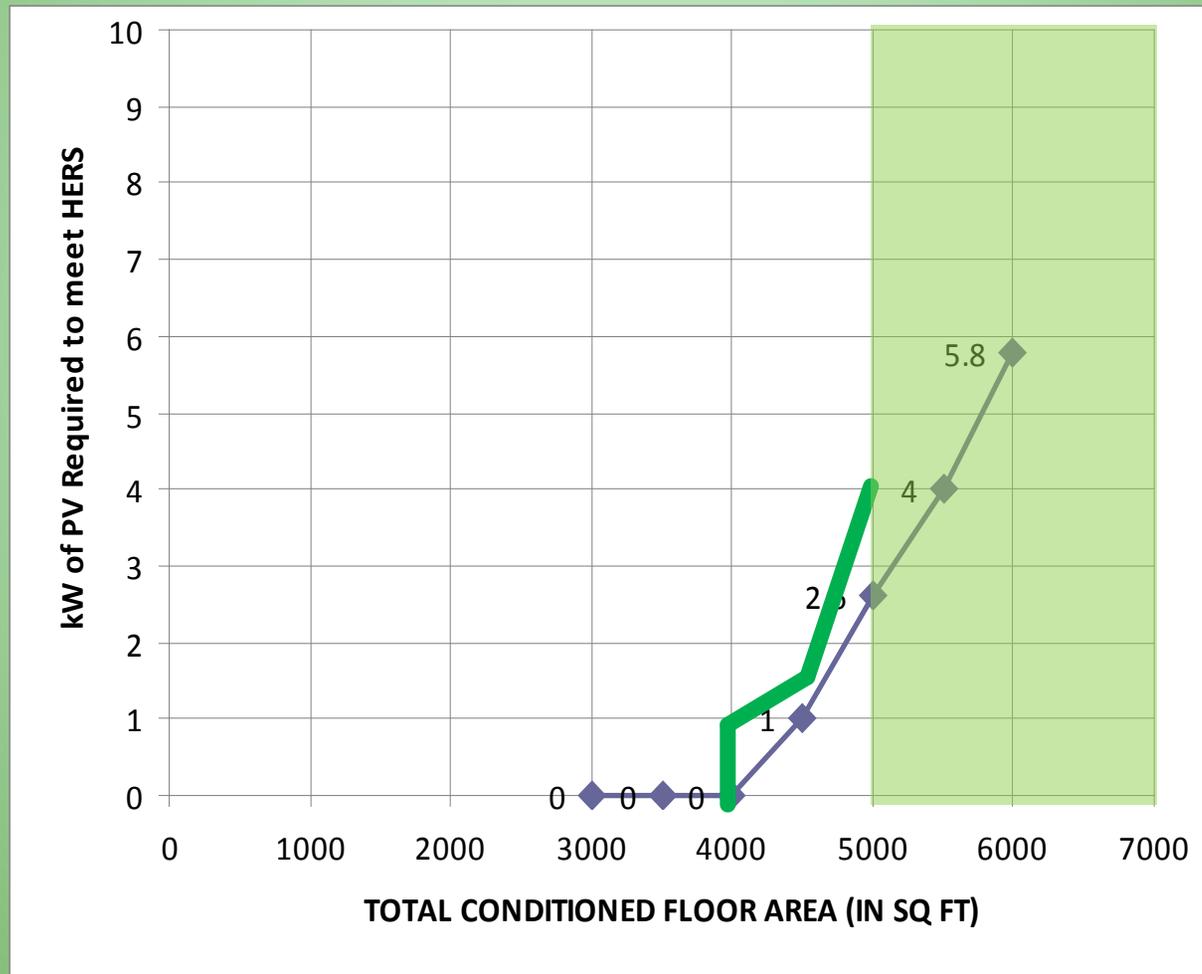
Revise to change maximum conditioned floor area for prescriptive to 5,000 sq. ft.

Table 3
PV Requirements for New Residences
Prescriptive Path Option 3000 sq. ft. to ~~6000~~ 5,000 sq. ft.



Revise to show maximum 5000 sq. ft. conditioned floor area for prescriptive and adjust lower end to not require PV systems smaller than is practical to install and use.

Table 4
PV Requirements for Additions
Prescriptive Path Option 3000 sq. ft. to ~~6000~~ 5000 sq. ft.



BUILDSMART DRAFT PROJECTED HERS RATINGS, 2011 – 2022

CODE EDITION	EFFECTIVE DATE	CONDITIONED FLOOR AREA	HERS
2009	January 1, 2011	≥ 8,000	10
2012	January 1, 2013	≥ 6,000	0
2015	January 1, 2016	≥ 4,000	0
2018	January 1, 2019	≥ 2,000	0
2021	January 1, 2022	ALL	0



**SOLAR FRIENDLY
COMMUNITIES**

The Opportunity for Local Governments

Neal Lurie
Executive Director, COSEIA

www.solarcommunities.org

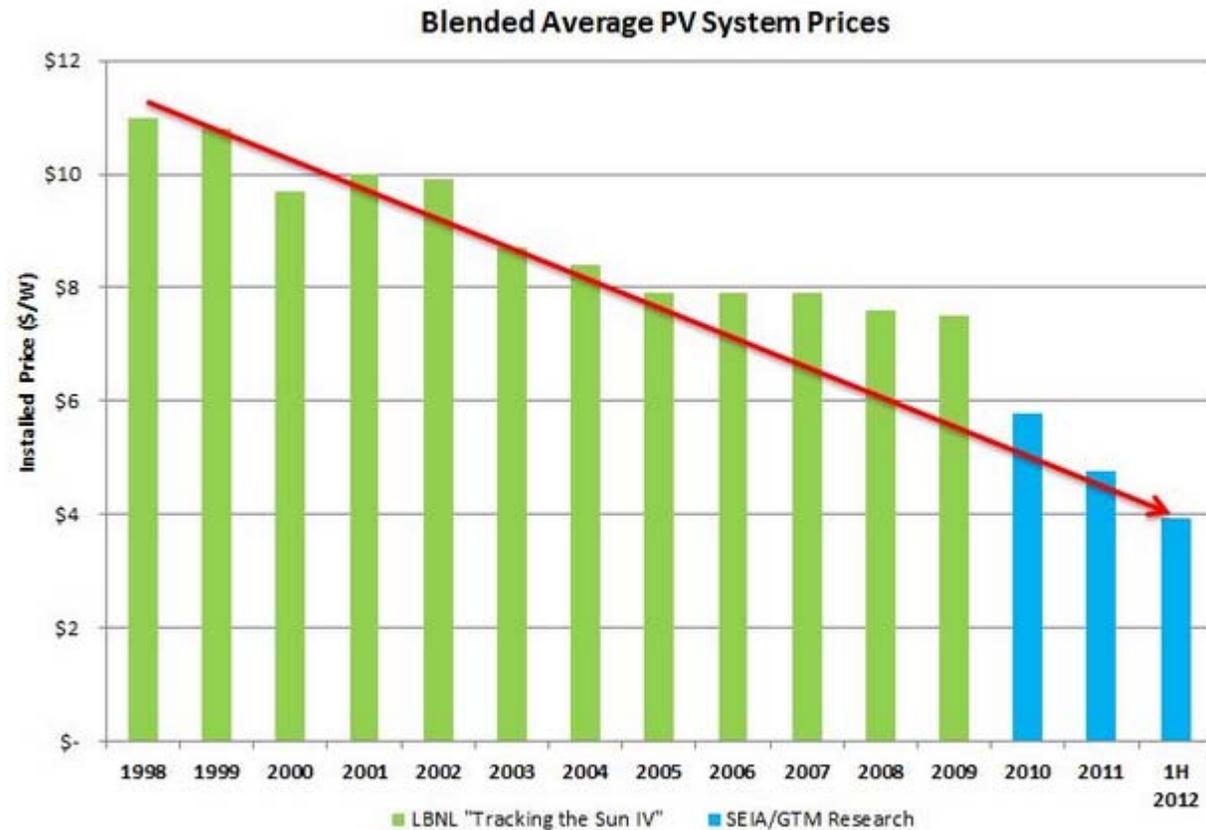


Public-Private Partnership: Cities, Counties, Nonprofits, & Industry

- One year ago an innovative partnership launched to address ‘soft costs’
- Goal: to make it easier, faster and cheaper to go solar
- Partnership with cities, counties & others
- Focused on best practices & education
- Helps local governments prepare for the rapid increase in citizens who want to go solar
- Recognition for local governments who take tangible steps to follow best practices



Solar Energy: Decreasing Costs Spurring Huge Growth

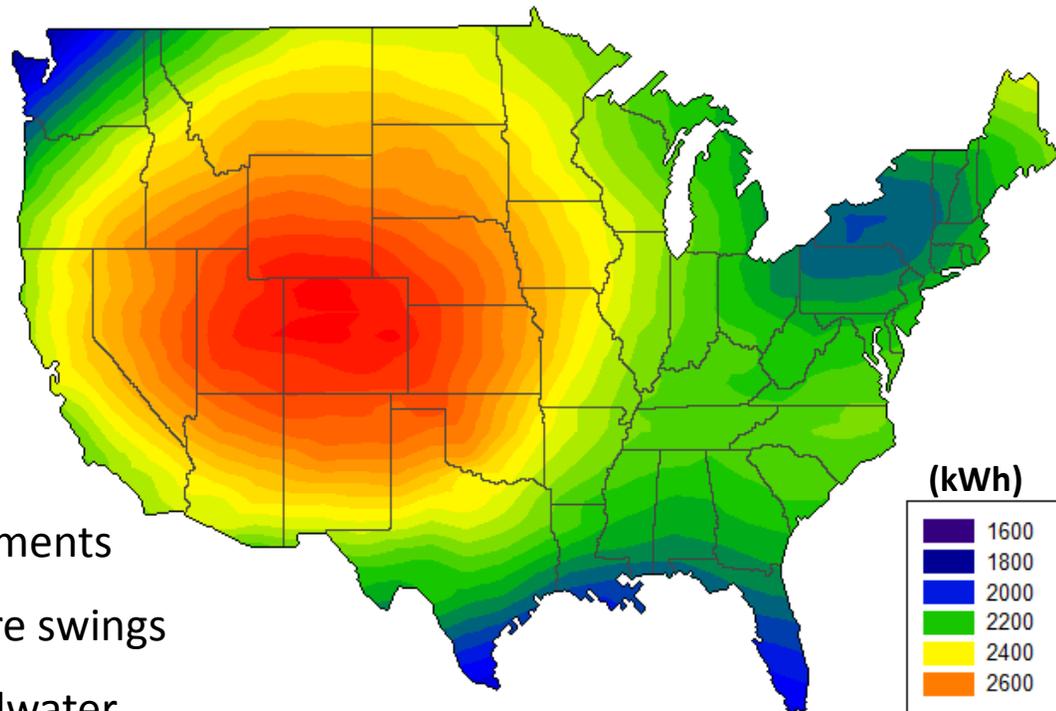




Colorado Advantage: the #1 State for Solar Heating Performance

Reasons:

- Large heating requirements
- Day-Night temperature swings
- Relatively cold groundwater
- Sunny climate



Source: NREL/FSEC – TMY3 Climate Data



The Solar Decade is Here: Why Citizens & Businesses Want to Go Solar

- Concerns about rising fossil fuel costs
- Predictable energy bills
- Rapidly decreasing solar costs
- Economic freedom, self reliance
- Preserve the environment for future generations





Citizens Want to Go Solar But ...‘Soft Costs’ Increasingly Cost More than the Solar Hardware Itself

- 200+ cities, 64 counties & 65 counties in Colorado
- Each has different requirements to go solar
- **This fragmented approach adds thousands of dollars for citizens to go solar - soft costs include:**
 - Permitting costs
 - Regulatory costs
 - Installation costs
 - Interconnection costs
 - And other similar costs

Solar Friendly Communities Program

An Innovative Approach that Benefits Your Community

- Collaborative partnerships and tools to make it easier, faster, cheaper to go solar
- Education, insights & recognition for local governments
- Prepare for 20x growth
- Initial partners: Denver, Fort Collins, Golden, Boulder County, COSEIA, Rocky Mountain Institute, American Solar Energy Society & U.S. Department of Energy





Big Advantages for Local Governments

Solar Friendly Communities Program:

- National best practices to make your job easier - no need to reinvent the wheel
- Reduce unnecessary costs for local governments
- Includes helpful tools, education, support
- Gain recognition as Solar Friendly Community
- Promote local economic development - solar is one of the fastest growing industry in America
- Citizens want to gain energy independence, this program makes it easier



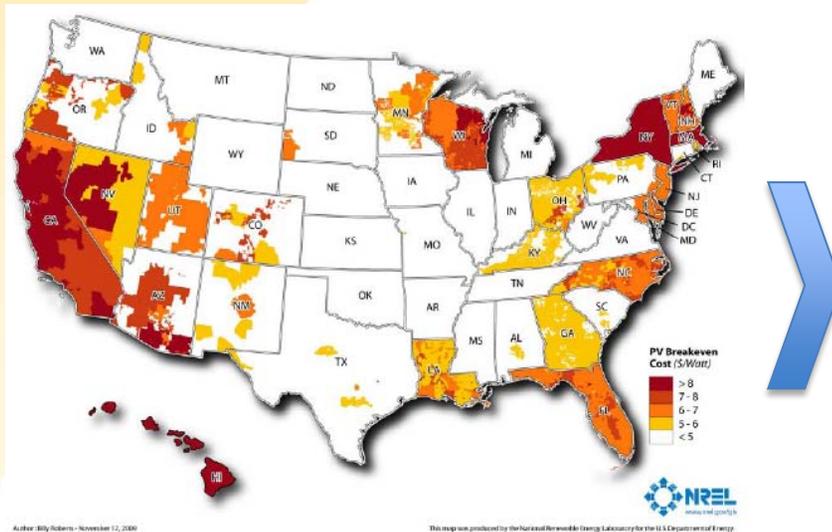
**SOLAR FRIENDLY
COMMUNITIES**

12 Best Practices: A Roadmap to a Solar Friendly Community

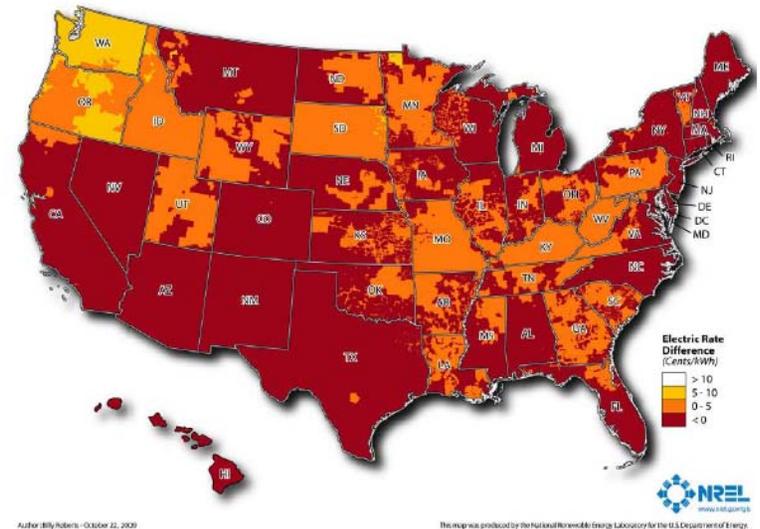
Rebecca Cantwell
Senior Program Director,
Solar Friendly Communities

DRCOG Workshop November 13, 2012

Difference between residential PV costs and prevailing Retail rates



2008: \$8/Wdc



2015: \$3.50/Wdc

But what does it mean for Local Governments?

Source: Denholm, Margolis, Ong, and Roberts. *Break-Even Cost for Residential Photovoltaics in the United States: Key Drivers and Sensitivities*. NREL. December 2009.

12 Best Practices: Roadmap to a Solar Friendly Community

#	Step
1	Provide a submittal checklist of all requirements for rooftop solar PV and solar thermal permitting in a single online location.
2	Offer a standard permit form that is eligible for streamlined review for standard residential or small commercial rooftop flush-mounted systems
3	Offer electronic or over-the-counter submittal and review options for standard systems
4	Issue permits within a specified timeframe
5	Charge actual costs for applicable permits and inspections, with a cap on the total
6	Replace community-specific solar licenses, if required, with standard certification for installers
7	Provide inspection checklist that explains unique requirements beyond applicable codes
8	Specify a narrow time window for system inspection
9	For efficiency, require only one inspection for standard rooftop systems on existing homes or businesses.
10	Adopt ordinances that encourage distributed solar generation and protect solar rights and access, including reasonable roof setback requirements
11	Educate residences on solar energy by providing information on financing options and projected economic benefits
12	Track community solar development and provide tools showing solar access in your community



12 Best Practices: Roadmap to a Solar Friendly Community

Earn enough points to win designation as a Solar Friendly Community

Designation	Points Required
Bronze	700
Silver	900
Gold	1100
Platinum	1400

The program is flexible and allows participation by both **large** and **small** jurisdictions



THERE ARE MANY WAYS TO REACH A GOAL

- Most steps have multiple parts
- In many cases, you can earn more points by taking several related actions
- For example...

Step 1. Provide a Checklist of All Permitting Requirements in a Single Location (275 Points)

- a. Provide checklists of all community requirements for PV and post them online at your community website: 100 points
- b. Provide checklists of all community requirements for solar thermal and post them online at your community website: 100 points
- c. Designate a solar coordinator as the community lead tasked with community outreach and internal coordination among departments: 50 points
- d. Provide a designated solar permitting page with information on how permits are processed and links to other related entities: 25 points



1. Provide a Checklist of All Permitting Requirements in a Single Location (275 Points)

Reasoning

Hosting up to date solar requirements in a single online location is one of the simplest, easiest ways to make sure installers and customers submit the right information on the right forms the first time. This will save everyone involved in the process time and money.

Example

The cities of Philadelphia of Denver offer simple and easy to use permitting checklists that represent different approaches to this best practice.

How to make it happen

Check out the permitting checklists online. Then, see where your current solar-related documentation is hosted and map out the different web pages, if applicable. Talk to your community's webmaster about consolidating the information.



2. Offer a standard permit form that is eligible for streamlined review (275 Points)

Reasoning

Permitting processes can add time and money to the installation of solar PV. By standardizing solar permitting, jurisdictions can streamline and expedite the process.

Example

Solar ABC's Expedited Permit Process for PV Systems provides a national standard of procedures developed by industry experts.



How to make it happen

Check out Solar ABCs on the SFC website and see how it compares to your existing permitting process. If not possible, designate one primary point of contact for installers for standard permits.



3. Offer electronic or over-the-counter submittal and review options for standard systems (150 points)

Reasoning

Electronic or over-the-counter submittal procedures can significantly cut down the time necessary for approval of permits, freeing up time for departments and installers.

Example

Santa Clara offers over the counter permitting, enabling installers to walk in with an application and walk out with approval in one visit.



How to make it happen

Initially, designate a point of contact who is well versed in PV permitting that will be able to turn around approvals or denials in a timely fashion. At the very least, authorize plan checkers to electronically communicate with contractors if an issue comes up.



4. Issue permits within a specified timeframe (100 points)

Reasoning

If a jurisdiction establishes and states a timeframe for permitting application decisions, installers have a better opportunity to plan their projects. This frees up time and enables installers to clearly communicate project timelines with customers.

Example

For a project that meets established criteria, the City of Philadelphia will issue an over-the-counter permit. In special cases, a standard permit will be issued with a 20-day approval timeline.

How to make it happen

Strive to issue permits the same day or within three days of application submittal. If this is not possible, state a firm policy on how long permits will take on your jurisdiction's permitting website.



5. Charge actual costs for permits and inspections with a cap on the total (200 Points)

Reasoning

Fees and costs associated with permitting and inspecting solar PV can create significant barriers to adoption. In some cases, these costs do not reflect the actual time and work associated with the process. By capping the fees and/or charging actual costs, the economics of solar improve.

Example

In Sacramento, California, installers pay a graduated flat fee for all commercial and residential systems. In the year since the city started cutting solar fees, permits more than doubled.



How to make it happen

Understand the specifics of your jurisdiction's cost methodology for setting permitting and inspection fees. Some jurisdictions create exemptions for systems that meet standard engineering calculations.



6. Replace community-specific solar licenses, if required, with standard certification for installers (25 Points)

Reasoning

Community-specific solar licenses can add unnecessary bottlenecks. Replacing them with nationally accredited standards is simpler and helps establish a national standard of competency for the solar industry.

Example

The North American Board of Certified Energy Practitioners has established a national standard for solar installations.



How to make it happen

Learn about NABCEP certification by exploring the website. Consider allowing NABCEP certified installers to bypass unique certification and inspection requirements within your jurisdiction.



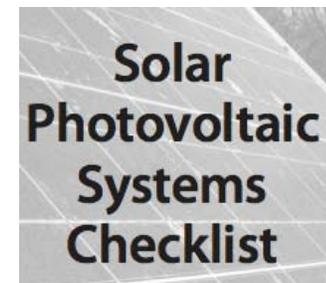
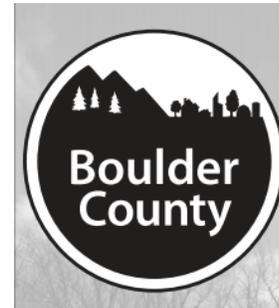
7. Provide inspection checklist that explains unique requirements beyond applicable codes (50 Points)

Reasoning

Some jurisdictions have unique priorities or interests that are not necessarily clarified by referring to adopted electric or building codes. Specifying these exceptional requirements upfront can help the jurisdiction avoid repeat inspections and allow installers to pass inspections more often.

Example

Boulder County's checklist for PV systems clearly states its requirements for rough inspections.



How to make it happen

Work with your building department to see if local inspection staff have any “unique” requirements or interpretations of existing code. Reach out to local installers for feedback to understand any confusion that exists and publish a checklist on the jurisdiction's website.



8. Specify a narrow time window for system inspection (75 Points)

Reasoning

Many communities have unpredictable timelines for when an inspector will come to a job site. That makes it hard for solar installers to plan their projects. By narrowing the window for a system inspection, installers can spend less time waiting on job sites—and that directly translates to cost savings.

Example

Denver has a two-hour inspection window, making the city one of the most efficient and timely for PV projects.



DENVER
THE MILE HIGH CITY

How to make it happen

Start the conversation with the building department and assess the current inspection window. Reach out to local solar contractors to see what's working well and what can be improved upon.



9. For efficiency, require only one inspection for standard rooftop systems on existing homes and businesses (100 points)

Reasoning

Multiple inspections add time to PV installations, requiring additional visits and hours on the the job site. Requiring a single inspection—rough or comprehensive—can significantly cut this time.

Example

The City of Philadelphia requires a single field inspection for residential projects.



How to make it happen

If your jurisdiction requires multiple inspections for a PV installation, reassess existing requirements and compare your jurisdiction to analogous communities with fewer requirements. Work with chief engineer and building officials to discuss feasibility of a single inspection.



10. Adopt ordinances that encourage distributed solar generation and protect solar rights and access including reasonable roof setback requirements (150 points)

Reasoning

Various policies can create a more favorable environment for solar PV. By implementing policies that allow installations and ensure access to solar access, fewer conflicts will emerge in the future.

Example

Boulder's Solar Access Ordinance creates "Solar Fences" by placing restrictions on shading from new builds within the city.

How to make it happen

Work with the local sustainability office, historic preservation advocates, fire officials, and your urban forester to assess the feasibility of adopting policies that explicitly balance potentially competing community desires such as urban forestry, historic preservation and solar access.



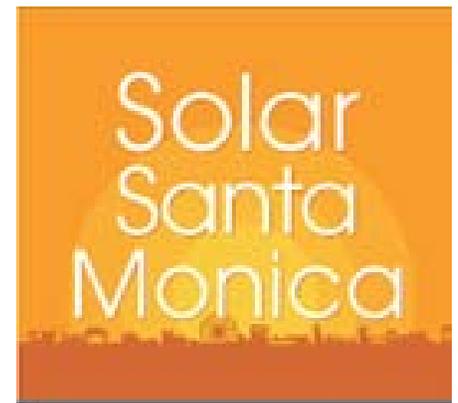
11. Educate residents on solar energy by providing information on financing options and projected economic benefits (125 points)

Reasoning

Improving education and consumer awareness remains critical to the success of solar adoption. Many potential customers lack adequate information on the options available.

Example

The City of Santa Monica houses a best-in-class customer education website for interested residents. They also provide educational materials on financing options.



How to make it happen

Develop tools and resources for website to educate consumers on value of solar and options available. Also consider outreach events.



12. Track community solar development and provide tools showing solar access in your community (75 points)

Reasoning

Keeping tabs on solar installations helps communities track progress toward becoming a Solar Friendly Community, but it can also be used as an educational tool, showing momentum and potential to customers.

Example

Arizona has a state-wide program to track applications for solar installations.



How to make it happen

Work with your permitting office and utility to quantify solar installations and publicize them through communications channels, such as your website.





Panel Response:



City and County of Denver

Why is Denver Participating?

- Raise Visibility of Existing Best Practices
- Economic Development/Employer Recruitment
- Solidify “brand” as one of the most sustainable cities in the US
- Creates Vision for city staff spread out across numerous departments and agencies



What is Denver Doing?

- Preparing to launch online permitting system
- Working with iTree (Open Source software) to improve energy dataset to better estimate the heating and cooling benefits of trees on residential and commercial structures
- Working with internal and external stakeholders to reframe the conversation from “Solar Vs. Trees” to “One Million Trees and One Million Solar Rooftops: How to Have Both”
- Wrapping up Solar Benefits Colorado, a solar group discount for City, State, and Federal employees in Colorado (115 signed contracts totaling 650 kilowatts)

Questions?

Jessica Scott

**Solar Program Coordinator, Office of Sustainability
Office of Mayor Michael B. Hancock
City and County of Denver**

Jessica.scott@denvergov.org