

APS 2011 Solar & Energy Efficiency Programs and Incentives for the Municipal Sector

Sustainable Cities Network
Solar and Energy Efficiency Workgroup
Jan 20, 2011

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APS Renewable Energy – Customer Generation

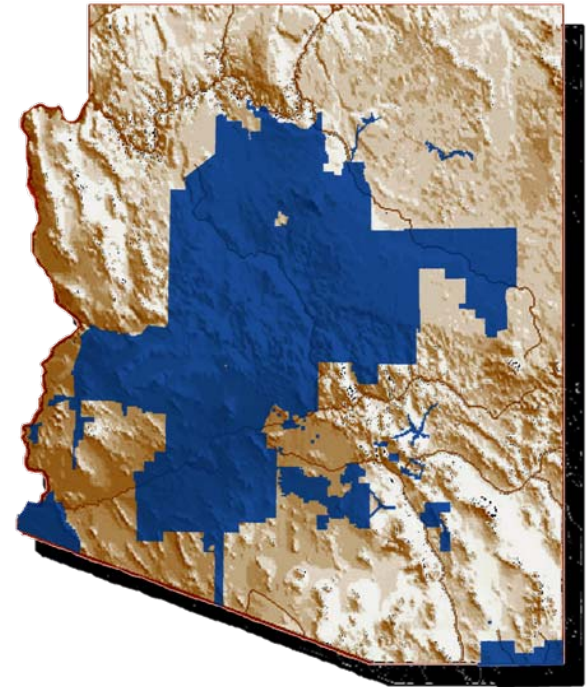


Overview of APS Incentive Programs

- APS Customers and Generation
- Efficiency First
- Why Renewable Energy
- Solar Energy
- APS Incentive Program
- Q & A

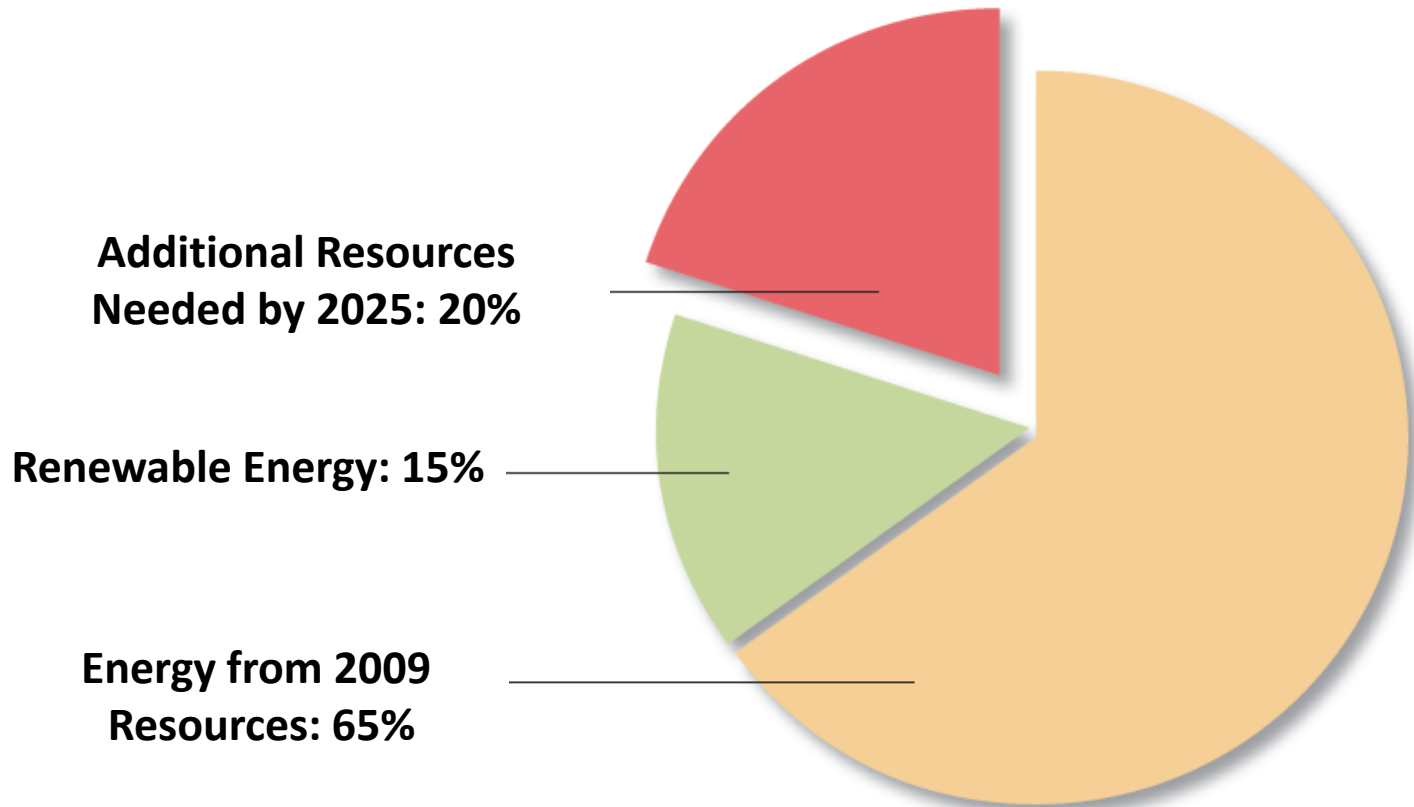
About APS

- APS has the 5th Largest Service Territory in US & over 1M customers
- Arizona is one of the fastest growing states in the nation
- Energy demand will increase almost 50% in 20 yrs
- Our customer growth has been 3 times U.S. Average
- 5,039 miles of transmission lines in APS territory



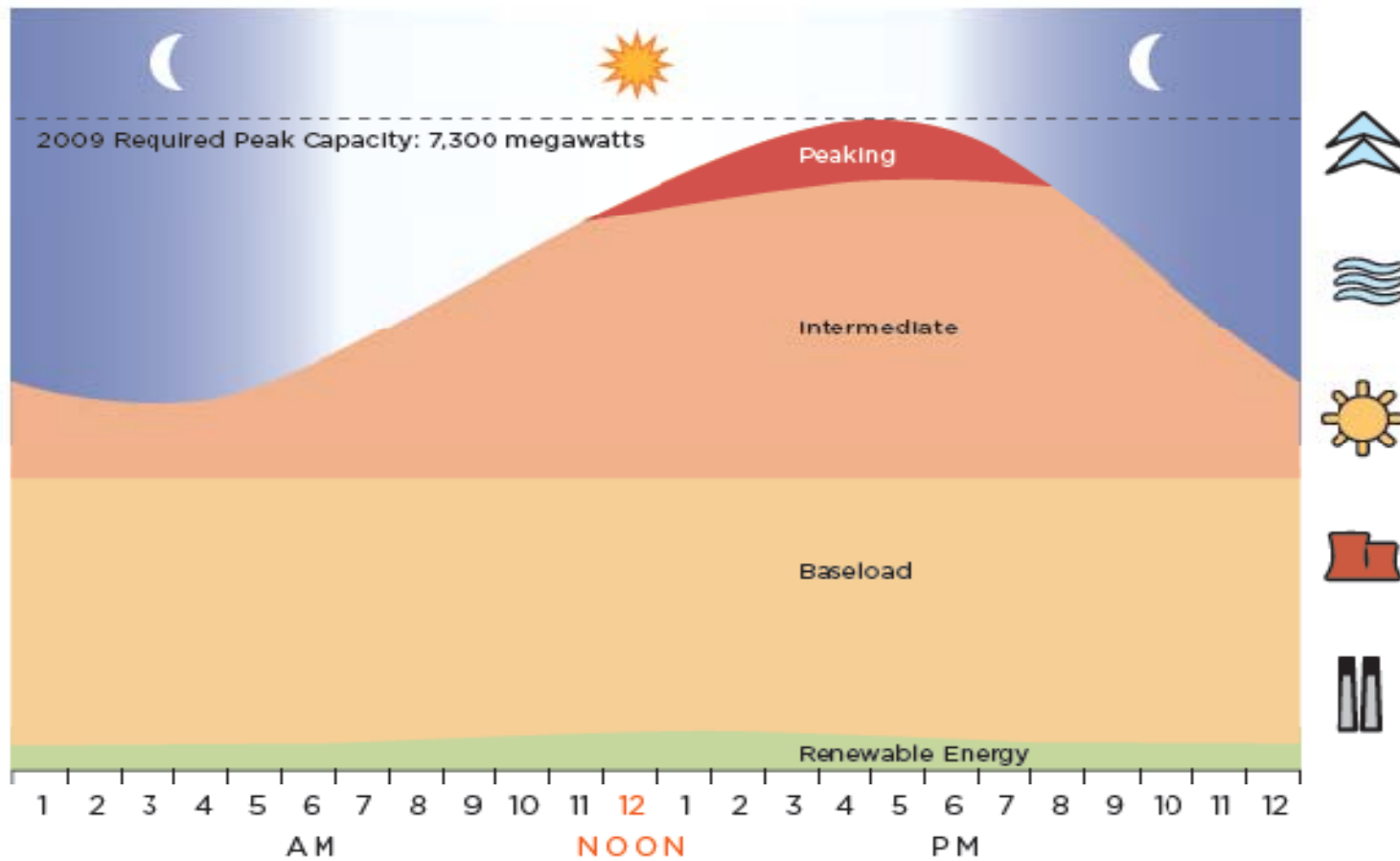
APS Retail Service Territory

APS Generation Needs - 2025

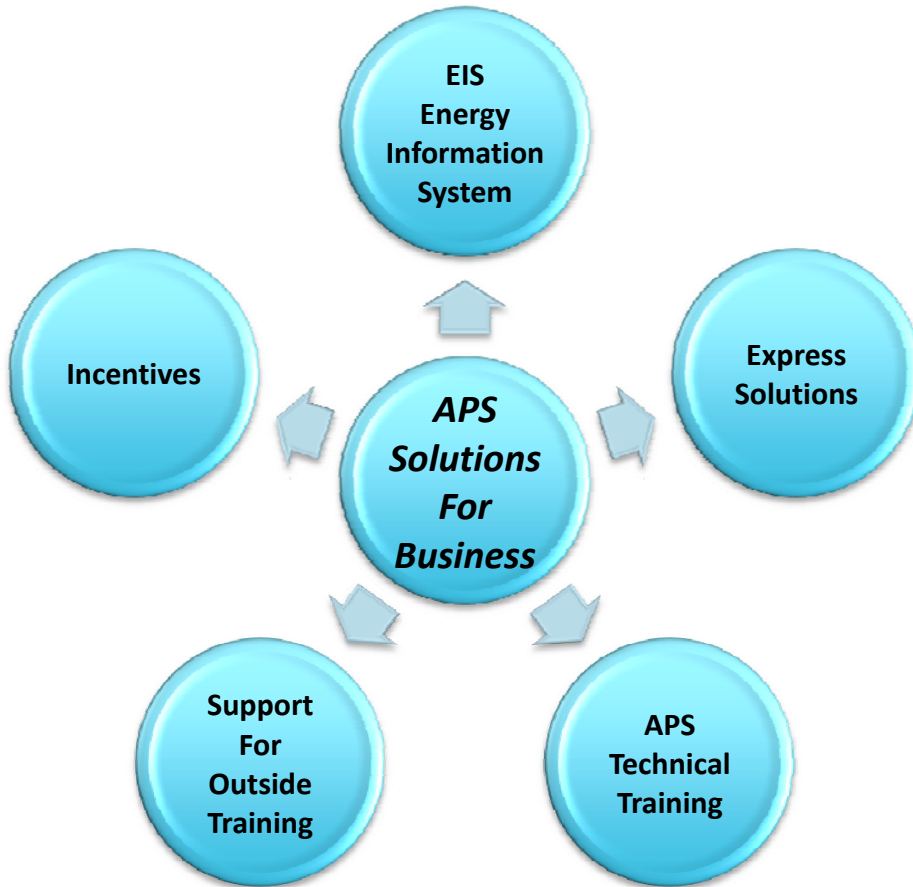


50% of our new demand will be met through renewable resources.

Generation Options



APS Solutions for Business Program



First Things First:

Take advantage of *APS Solutions for Business* Technical Training, Energy Programs and Incentives:

- Reduce your load first
- Get the quickest payback for your energy dollars
- Right size your PV System

www.aps.com/businessrebates

APS Solutions for Business Program

Some of the resources available to you:

- [“Prescriptive”](#) rebates pay up to 75% for common projects.
- [Trade Allies](#) can provide consulting, design and installation assistance.
- [Fact sheets](#) and [case studies](#) offer ideas and local examples.
- [Training page](#) lists upcoming workshops. Customers can qualify for a 50 percent discount.

APS Solutions for Business Program

- APS is partnering with National Bank of Arizona (NB|AZ) to offer low interest-rate financing to small businesses, schools and government customers participating in the Solutions for Business program.
- APS rebates can reduce a significant portion of the project costs and financing may cover the rest.

Limited Time Offer: 3.99 Percent Interest Rate. Open to small business, school and government projects requiring less than \$50,000 financing.

Estimate your Savings

Use the “[savings estimator](#)” tool to compare your potential energy savings with an estimated loan payment. To calculate your costs you will need the following:

- Your bill demand (found on your APS bill or [aps.com](#))
- Energy savings from your project in kWh (from your contractor or internal estimate)
- Total project cost (from contractor or internal estimate)
- Estimated APS rebate (from the [rebate application](#))
- Current interest rate (from the [bank's Web site](#))

Why Use Renewable Energy?

After efficiency measures have been taken, consider renewable energy.

Customers are motivated to use renewable energy for a number of reasons:

- Concern for the environment
- Desire to lower utility costs
- Hedge against future fuel cost
- Become more energy independent
- Good corporate citizenship
- Corporate marketing/image building

APS incentives can help Arizonans take advantage of our great resources.

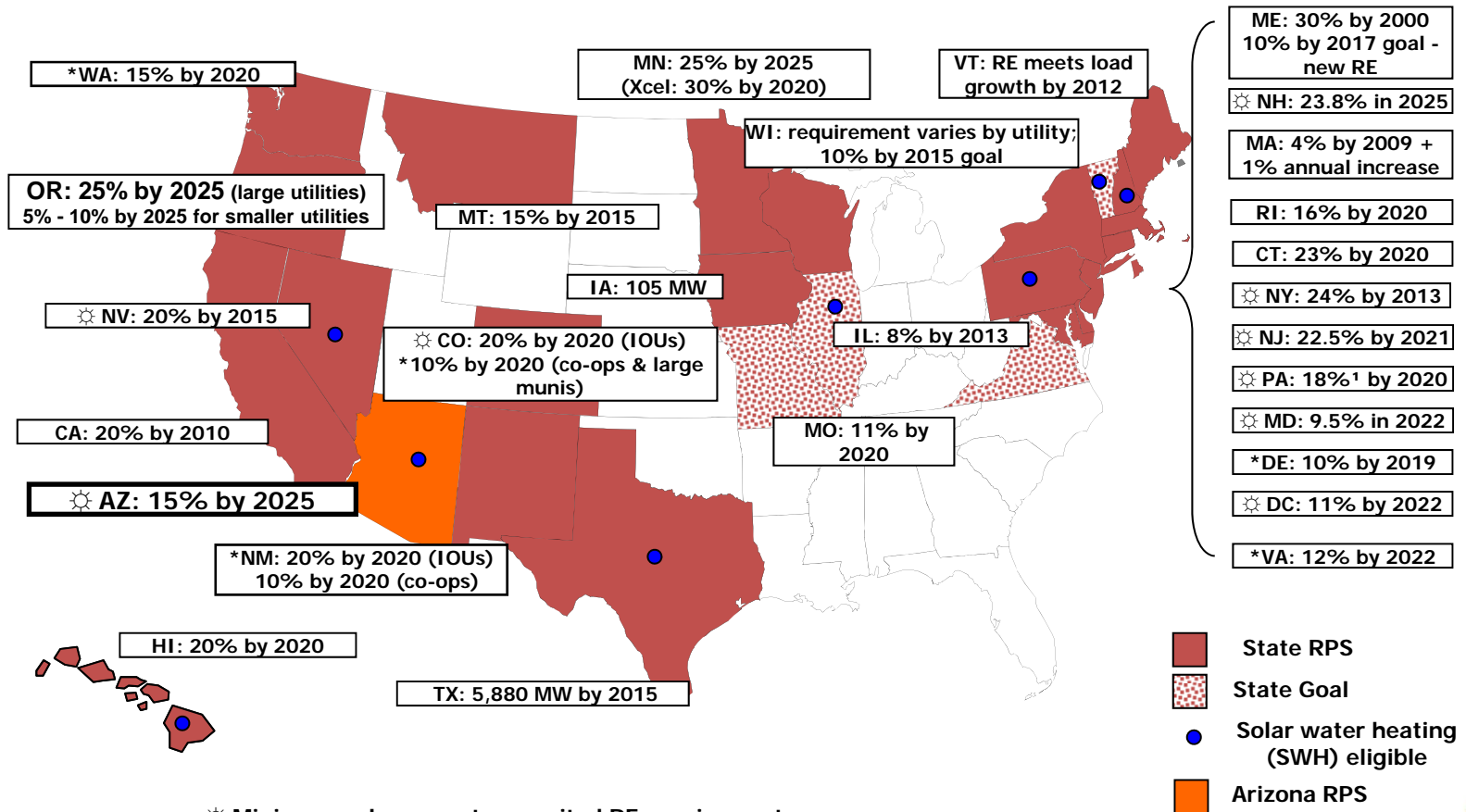
Renewable Energy Standard

As approved by the Arizona Corporation Commission, by 2025:

- 15% of APS retail sales must come from renewable resources
 - Up to 70% can be utility scale production
 - At least 30% must be from *distributed** resources
 - Half from residential
 - Half from non-residential

****Distributed systems are those that are installed at a customer location to offset a portion of the load at the interconnected meter.***

Renewable Energy Standard



☀ Minimum solar or customer-sited RE requirement

* Increased credit for solar or customer-sited RE

¹PA: 8% Tier I / 10% Tier II (includes non-renewables); SWH is a Tier II resource

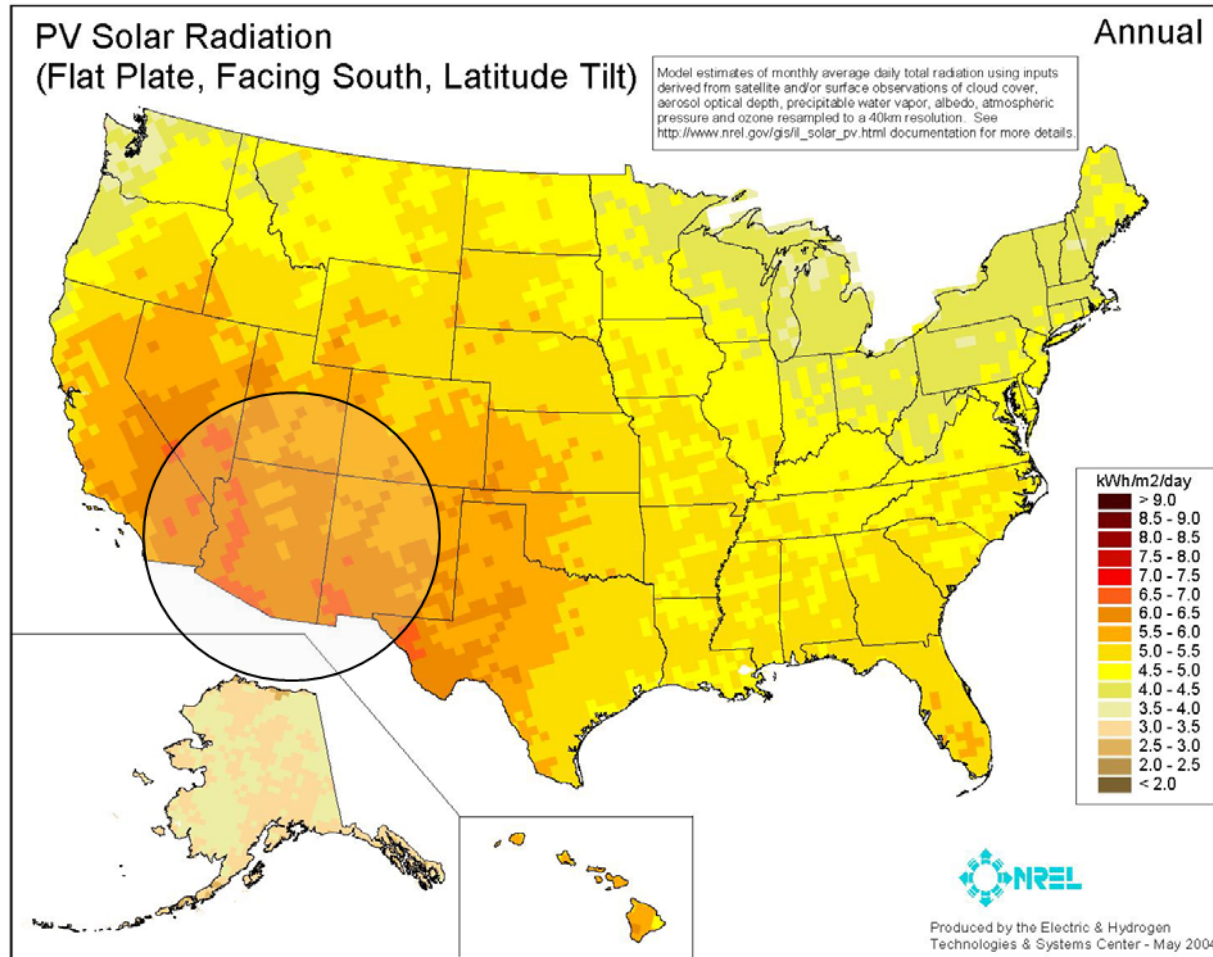
Qualifying Renewable Energy Technologies

- Solar Water Heating
- Solar Pool Heating
- Solar Daylighting
- Solar Space Heating and Cooling
- Photovoltaic (PV)
- Biomass and Biogas – Electric & CHP
- Geothermal
- Wind (small scale)
- Hydro

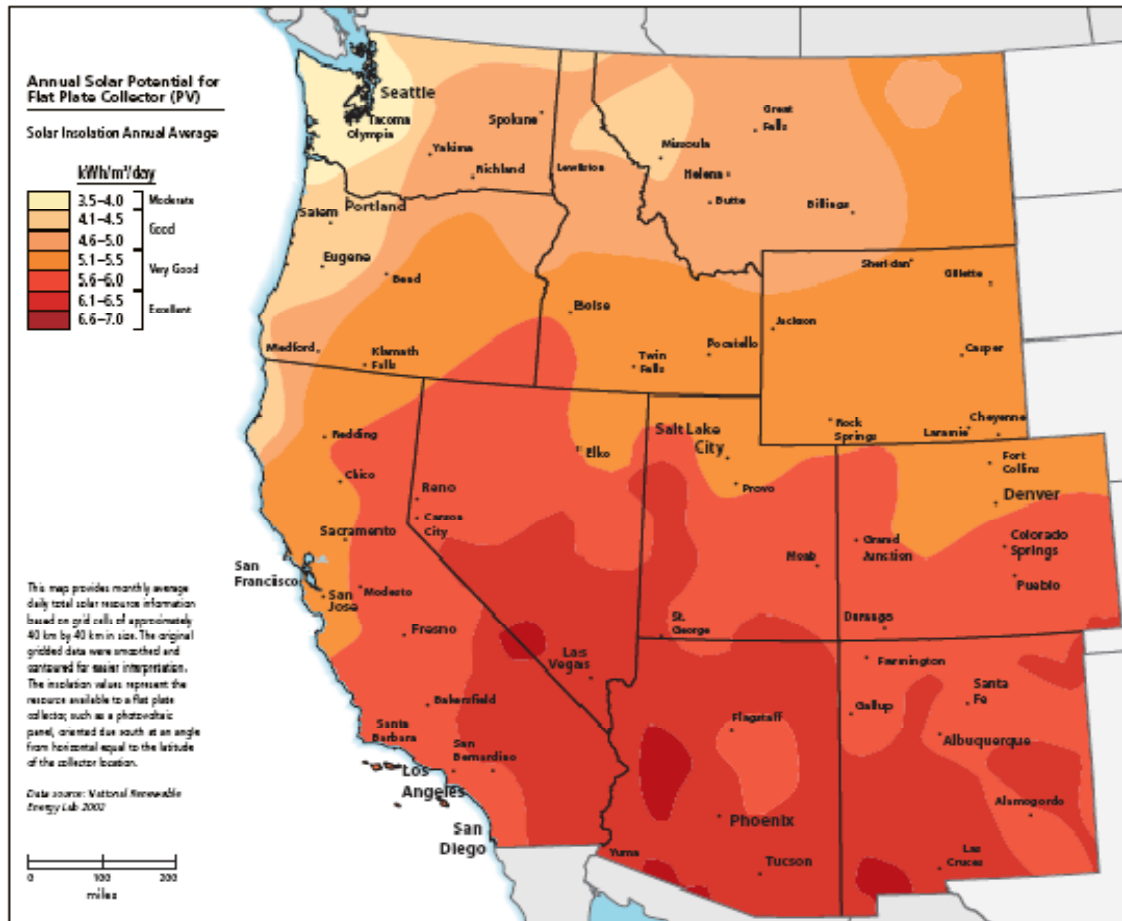


Solar Energy

Solar Energy



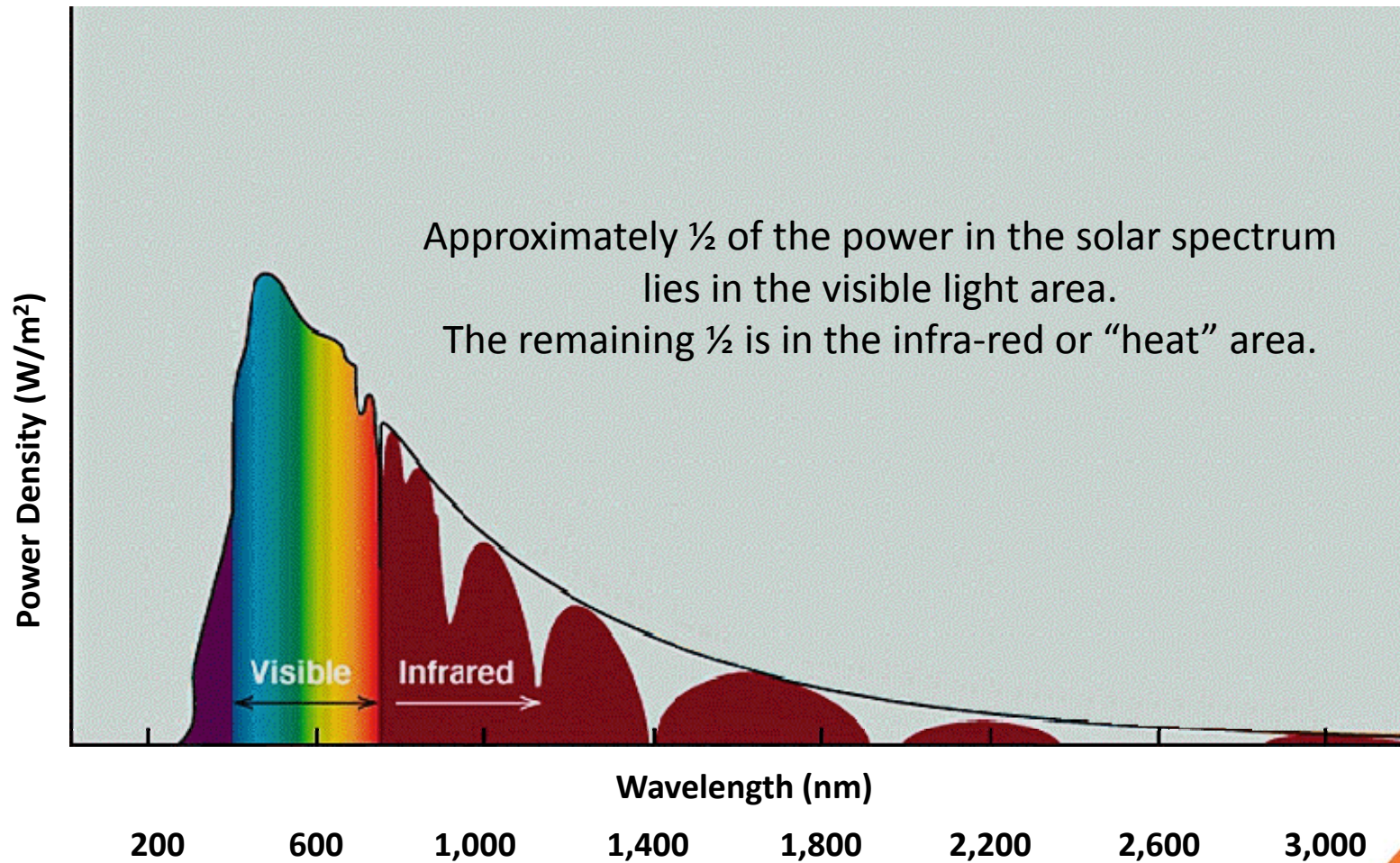
Solar Energy



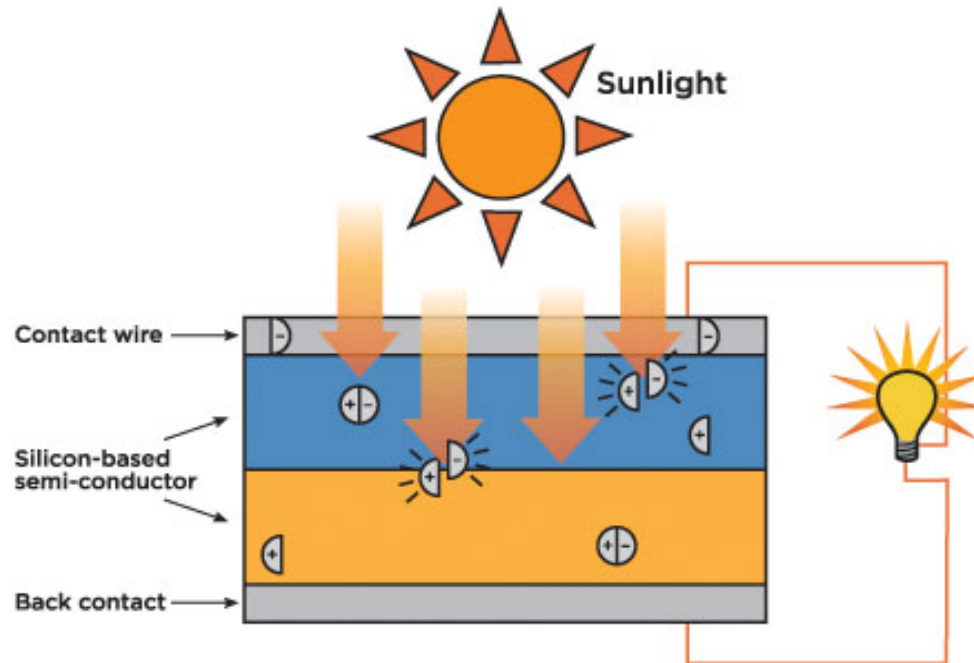
Solar Resources

- Abundant – 300 days of sunshine a year
- Intermittent but predictable
- Photovoltaic & Solar Thermal

Solar Energy



Photovoltaics (PV)

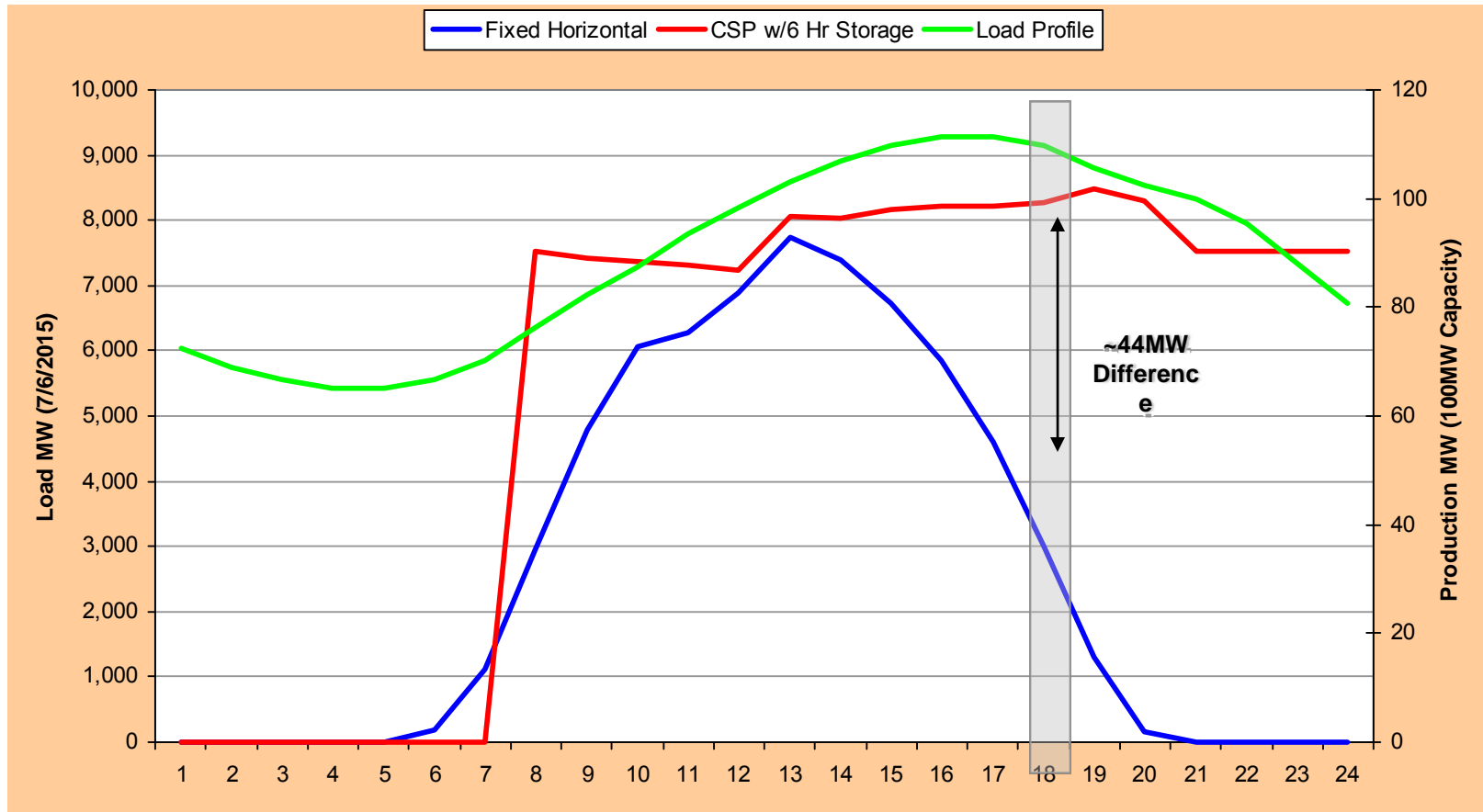


A photovoltaic cell consists of an unstable compound – usually silicon mixed with other elements – sandwiched between two conductors. Photons of sunlight knock the electrons loose from the silicon atoms, which are then captured by the conductor.

PV “Rules of Thumb”

- Typically sized in “kW”
- On average, a kW of PV will produce about 1,600 kWh of electricity in Southern Arizona
- Panels should be installed due south
- Tilt should be roughly equal to the latitude (about 30°) but a lower tilt will give more summer production
- Pricing in the Phoenix area is around \$5.00 per installed watt (less for larger projects with economies of scale)
- PV will decrease the amount of kWh you purchase from your utility, but may not decrease your demand charges.

Different Types of Solar vs. Time of Day



Solar Production Data from Forecast for July 6, 2015

How Solar Is Used by Customers



Deer Valley High School, Glendale, AZ - 1 MW installation

How Solar Is Used by Customers

ASU

ASU is committed to expanding solar installations across all four campuses to a total of 10 MW by the end of 2010, and 20 MW by 2020.



ASU Apache Blvd Parking Structure

How PV Is Used by Customers



Grand Canyon Visitor Center

How Solar Is Used by Customers

Arizona Western College

- 5 MW array
- Five different solar technologies
- State-of-the-Art Workforce Development and Curriculum



How Solar Is Used by Customers

El Chorro Lodge

Installed solar covered parking to help attain LEED Gold certification from the U.S. Green Building Council.



Source: <http://www.elchorrolodge.com/about-history.html>

How Solar Is Used by Customers

Frito Lay

PV installation at the Casa Grand plant which produces Lay's, Ruffles, Doritos, Tostitos Crunchy Cheetos, Fritos, SunChips.



Source: <http://pinalcountyaz.gov/ed/Lists/News/DispFormA.aspx?List=8a5ca9be%2D3b6d%2D40ff%2Da7c0%2D7210223f01ae&ID=2>

How Solar Is Used by Customers

Costco – Scottsdale

The Costco-Scottsdale location uses solar thermal technology to heat the water used for its new car wash.



Source: <http://www.easyenergyweb.com/>

How Solar Is Used by Customers



Solar Daylighting



Solar Daylighting with PV

2011 Implementation Plan Highlights

What Happened in 2010

Over 300 New Projects Approved in 2010 (through Oct 31)*:

<u>Type</u>	<u>Projects</u>	<u>Lifetime \$ Commitment</u>
Up Front	133	\$2,384,896
Production Based		
<i>Medium</i>	97	\$24,354,031
<i>Large</i>	75	\$114,882,765

*Funding for projects approved during 2010 include dollars from previous year cancellations

Schools and Government Program

- Settlement Agreement requires 50,000 MWh for schools within 36 months of Commission approval
- Publically funded K-12 in APS service territory
- \$7 million initial budget
- Solar Service Agreements and APS ownership (up to 17 MW)
- Eligibility based on school district characteristics and priority to lower populated counties for Government projects
- More details to follow after ACC Open Hearing the week on Jan 24th.

Wholesale DE Feed-in Tariff

(Powerful Communities)

- Traditional FIT program in response to Commission and stakeholder interest
- 30-200kW systems eligible
- 2 MW annually, three-year initial program
- 20-year fixed price offer (\$.195/kWh)
- Targeted customer market segments
 - Non-profits, multi-tenant, HOA, low-income housing
- Plan to launch Q2 2011

2011-2015 Budget Highlights

- \$96.4 million in 2011 is ~\$10 million > than 2010
 - \$16.2 million RG, \$78.2 million for DE, \$2 million R&D
- RES Adjustor reset to collect \$90.4 million in 2011
 - \$4.05 residential customers (2009 = \$3.46)
 - \$150.53 C&I <3 MW (\$128.70)
 - \$451.60 C&I >3 MW (\$386.10)
- Five-Year RES budget = \$738 million
- Lifetime PBI Commitments
 - 2011 = \$670 million
 - 2015 = \$1.1 billion

How the Program Works

APS Renewable Energy Incentives

Types of Incentives for 2011 (*Competitively Awarded*)

Up-front Incentives (UFIs):

- Based on estimated production or energy displacement.
- Awarded every two months.
- Total incentive is paid at system completion and limited to \$75,000.

Production Based (PBIs):

- Incentives for “medium” sized systems (over \$75,000 in incentives but limited to a system size of 200kWac) are awarded every 2 months.
- Incentives for “large” sized systems (over 200 kWac) are awarded twice a year. Applications are due at the ends of Feb. & Aug.
- Incentives are paid quarterly based on system production for the term of the customer agreement with APS – either 10 , 15, or 20 years.
- APS takes ownership of the RECs only, not the energy.

Note: In 2010, UFIs are limited to \$75,000 and medium PBI projects are those up to 100 kWac.

APS Renewable Energy Incentives

- **Limitations**

- Size limit of 2 MW(ac) for PV
- Estimated budget for 2011:
 - UFI - \$2 M
 - PBI - \$73 M
 - Schools and Government Facilities PBI program - \$27 M
- Systems must be installed at customer's location
- Cannot be "oversized" (system cannot be designed to produce more energy than the customer uses annually at the interconnected meter)
- Incentives cannot cover more than 60% of the system cost

- **Competitively awarded based on project "scoring"**

How the Competitive Process Works

- **Customer submits a complete application which includes:**
 - Description of the system and estimated output from PV Watts
 - Signed installer contract (can be contingent on APS funding)
 - Term of the agreement– either 10 , 15 or 20 years
 - Amount of incentive requested per kWh of production, up to the maximum allowed under the program – listed at www.aps.com/GoSolar. The lower the incentive amount requested per kWh, the more competitive the project.
 - The “score” assigned to the project using the APS online ranking calculator.
- **APS will rank the projects received each period based solely on their “ranking scores”. The lower the score, the better. Funds will be reserved for projects on the list starting with the lowest score first, until available funds for that period are exhausted.**
- **Customers not making the funding cut may adjust their applications as they wish and compete in the next funding period.**

APS Project Scoring

PBI Scoring Example:

PBI INDEX CALCULATOR	
Criteria	
Incentive Terms (Select)	15-year PBI, 15 year REC
Project Cost (\$) (includes financing if applicable)	\$ 500,000
Estimated Annual Production (kWh)	160,000
Renewable Fuel Source (Select)	Solar
Technology Type (Select)	Solar: PV Grid-Tied
Requested PBI (\$/kWh) Max Value \$ 0.168	\$ 0.1080
Ranking	
PBI Ranking Index Value	1,080
Your total incentive payment is \$259,200	

Calculator located at: http://www.aps.com/_files/solarRenewable/PBICalculator.xls

Example of a 100 kW system requesting an incentive of \$0.108 per kWh for a 15 year period. Scoring may go up or down based on the per kWh incentive request and the 60% cap based on system cost.

Tax Credits

Photovoltaics & Solar Thermal Systems

Municipalities can use a 3rd party arrangement to take advantage of these credits.

- Federal Tax Credit
 - 30% of system cost

- State Tax Credit
 - 10% of system cost, capped at \$25,000 per building and \$50,000 per year

Consult your Tax Advisor to determine amounts for which you qualify.

Power Purchase Agreements

(aka: Solar Service Agreements, or “SSAs”)

■APS Customer:

- Contracts with third party to install and own the system
- May assign APS incentives to third party

■APS

- Pays incentive based on actual production
- Takes ownership of RECs

■Third party

- Installs, owns and maintains system
- Takes 30% investment tax credit (ITC) and any depreciation
- Charges customer for system production/displacement on a per kWh basis

Power Purchase Agreements

(aka: Solar Service Agreements, or “SSAs”)

Advantages:

- Little or no up-front cost (negotiated item)
- Non-profits and governments can take advantage of the ITC dollars
- Third party takes care of maintenance
- If system isn't producing, customer typically is not being billed

Disadvantages/Concerns:

- May increase the overall cost of the project (the per kWh charge factors in the cost of capital, maintenance, etc. of the third party)
- For commercial, tax paying organizations, it is unclear if there will be future regulation on these types of systems from the Arizona Corporation Commission
- APS customer is still bound to the Credit Purchase Agreement

Important Timelines

After notification of the award, the customer must:

- Return a signed Credit Purchase Agreement (CPA) within 30 days.
- Within 120 days the customer must provide “proof of advancement” which includes submission of the “Interconnection Application” if the system is grid tied.
- Within 365 days the customer’s project must be completed.
- Within 90 days of the system commissioning, the customer must provide final documents including an “Installation Certification” form and proof of the total project cost which will be verified by APS and is used to confirm the 60% incentive cap.

Excess Production Compensation

How APS compensates customers for intermittent excess production:

Net metering (EPR-6) – The customer is given kWh credits for excess energy production delivered back to the APS grid. If the customer is on a Time of Use (TOU) rate, their kWh credits can be used to offset either “peak” or “off-peak” usage based on when it was delivered to APS. The PV system cannot be sized larger than 125% of the customer’s most recent 12 month peak demand (AC) in order to qualify for EPR-6. This is typically the most advantageous rate for customers.

Net billing (EPR-2) – Under net billing, the customer receives payment each month for any excess production based on the non-firm purchase rates described in Rate Schedule EPR-2. The rates under EPR-2 may change year over year.

Standard Contract - Solar (SC-S) – If the system is larger than 100 kWac and the customer is not using Net Metering (EPR-6), a Standard Contract – Solar (SCS) must be filed with, and approved by, the Arizona Corporation Commission. Under the SCS, the customer will be compensated using non-firm power purchase rates (EPR-2), but will also be subject to “stand-by” charges based on their energy demand.

Lessons Learned

- Scoring is fluid – projects that are not competitive in one period may be competitive in the next.
- Make sure your project has been vetted through your legal department before you commit to moving forward.
- Financing and construction can be complicated. Both will probably take longer to complete than you plan.
- Take a critical look at the proposals you receive to make sure the numbers make sense – does it over-promise on production and/or savings?
 - Production Estimates, Escalators, Utility Costs, Demand Charges
- Does the system fit within the rules of the incentive program (is it sized too large)?
- Will you be able to use “Net Metering” (is the system under 125% of your peak demand)?
- Extension policy has to be more stringent in 2011

a better tomorrow
starts today

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Thank You

a better tomorrow
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A better tomorrow starts today.

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