# Solar Generation: Bright Spots and Cloudy Issues

Rick Bowker, MLGW

Utility Technology Association

October 19, 2017

MLGW

# Solar Generation Options: Then and Now

* <u>A Decade Ago</u>
  * TVA Generation Partners (pilot)
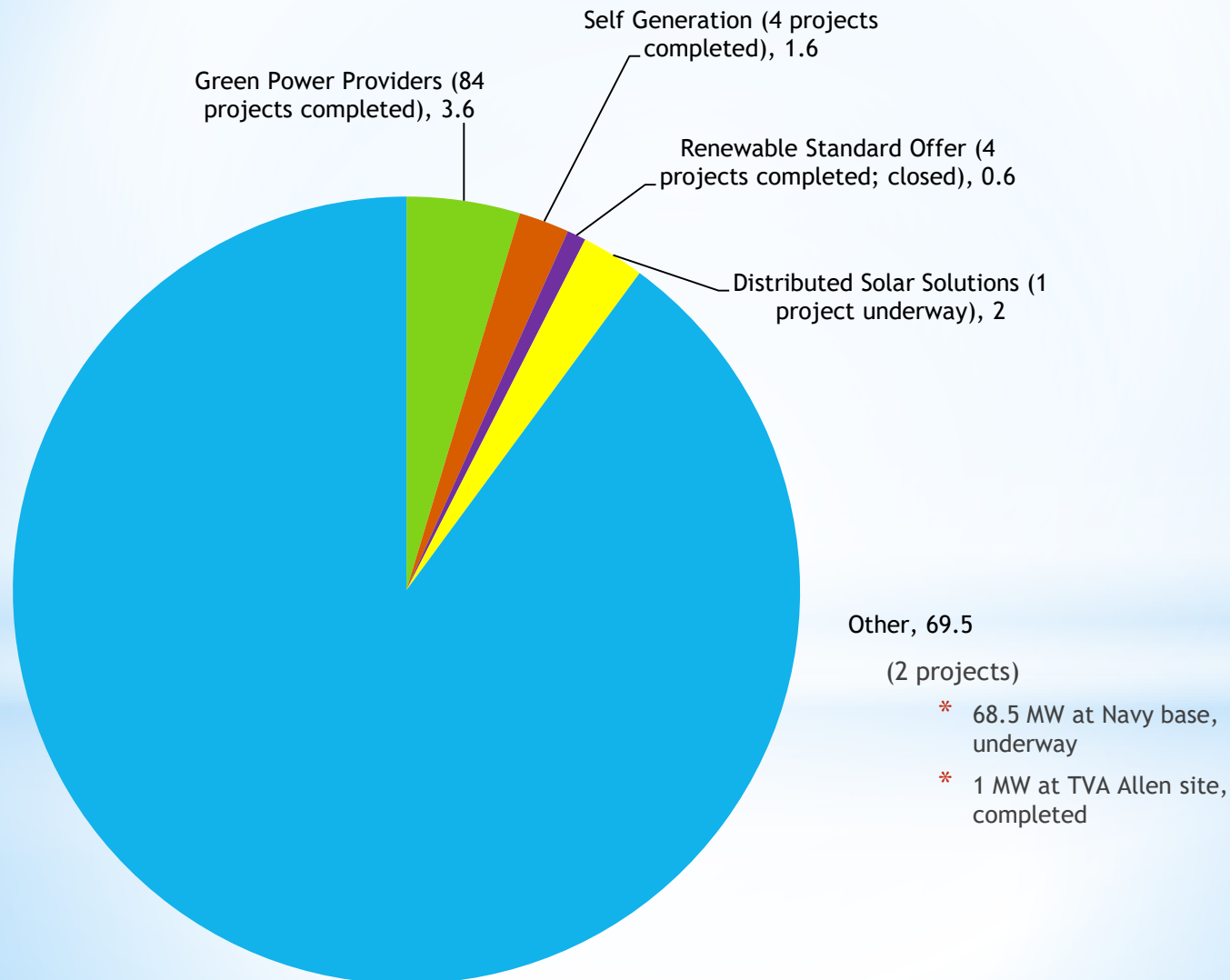  * TVA Dispersed Power Production (PURPA requirement; <10 participants Valley-wide)

* <u>Today</u>
  * TVA Green Power Providers
  * TVA Dispersed Power Production
  * Self-Generation (behind-the-meter)
  * TVA Distributed Solar Solutions
  * Other

Solar represents 100% of the "distributed generation" projects in Shelby County, so we use the terms interchangeably here
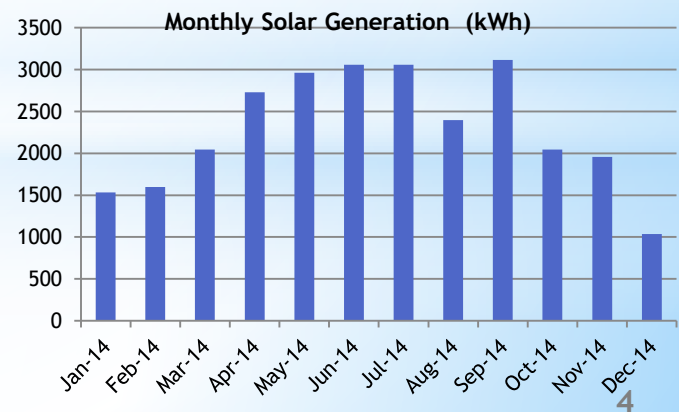
# Distributed Generation in Shelby Co
## (Generation Capacity in MW)

Self Generation (4 projects completed), 1.6

Green Power Providers (84 projects completed), 3.6

Renewable Standard Offer (4 projects completed; closed), 0.6

Distributed Solar Solutions (1 project underway), 2

Other, 69.5

(2 projects)

* 68.5 MW at Navy base, underway

* 1 MW at TVA Allen site, completed

# Shelby Farms Park Conservancy Solar-Assisted EV Charging Station

* 20 kW solar array serves as canopy for 10-space EV Charging Station
* EPRI/TVA/MLGW project installed in 2012 to monitor charging habits to study EV impact on electric system
* Shelby Farms Park
  * Provides free charging to EV drivers
  * Sells solar output to TVA through Green Power Providers (27,512 kWh in 2014, then offline for park construction; resumed generation in May 2017)
  * Buys 14 Green Power Switch blocks to claim "solar assisted"

**Monthly Solar Generation (kWh)**

# Tennessee Solar Environment

* TVA sales are flat; no need for new generation
* Net Metering is not allowed
  * Local Power Companies (LPCs) have all-requirements contracts with TVA, thereby preventing LPCs from owning generation or buying power from others
  * LPCs partner with TVA to offer customer options
  * LPCs want to discourage behind-the-meter installations, which reduce revenue and shift fixed costs embedded in the energy portion of electric rate to other customers
* Third-party ownership <u>may</u> be feasible
  * LPCs are only entities allowed to sell power to end-users (outside of TVA direct-served customers)
  * Acceptable if contract is structured so end-user is leasing a system or leasing land to system owner—as long as customer is not buying kWh output from system owner

# Tennessee Solar Environment

* Customers <u>like</u> solar
    * Household/community interest grows
    * Businesses are making public commitments for renewable energy
        * TheRE100.org
        * Renewable Energy Buyers Alliance (REBA)
        * RMI Business Renewables Center
    * Buzzword is "additionality" (ie, new construction)
* Customers who like solar have higher utility satisfaction and engagement
    * Customers who feel their utility supports solar energy are twice as likely to give their electric provider an excellent customer satisfaction rating (ESource 12/7/2016)
    * Solar customers are nearly three times as likely to embrace utility-sponsored programs such as demand response or to order new products online in the past year (ESource 6/29/2016)
* Current options don't meet evolving market demand, so new options are needed
    * Community Solar and other new options
    * Changes to existing options

# How Does This Affect You?

* Information Technology plays a <u>key role</u> in successfully serving the existing and future market needs for distributed generation
  * Many LPCs thought a handful of customers would install solar or other forms of distributed generation
    * For some LPCs, that remains true—but today there are 3,000+ participants in Green Power Providers alone
    * That's an average of 23 GPP projects per participating LPC
    * MLGW is approaching 100 customers across all options
  * Countless opportunities exist to automate and prepare <u>before</u> distributed generation affects a significant volume of customers
  * Managing by spreadsheet is <u>not</u> recommended!

# Prepare for Changes and New Options

* GPP Participation Agreement lengths
  * Initially, 10-year term then raised to 20-year term
  * Early customers had opportunity to extend their 10-year agreements to total 20 years (not all chose to extend)
  * *What internal measures does your organization have to monitor GPP agreement end dates and stop bill credits?*
* Community Solar is another hot topic
  * Requires programming to handle subscription payments as well as utility bill credits for each subscriber's share of generation
  * Options and prices could vary among multiple projects in same territory
  * *How quickly can your utility handle this programming?  Can you interface with Community Solar developers' who have bolt-on billing tools?  Do you have space on the bill?  Can you support online enrollment?*

# Prepare for Declining Incentives

* Green Power Providers incentive applied as credit on monthly utility bill
    * As system costs declined, so have incentives (any premium is based on year Agreement was executed)
        * 2006: $0.15 per kWh (residential) or $0.20 per kWh (if demand-metered)
        * **2009:** $0.12 premium per kWh + retail rate
        * 2013: $0.09 premium per kWh + retail rate *
        * 2014: $0.04 premium per kWh + retail rate
        * 2015: $0.02 premium per kWh + retail rate
        * 2016: retail rate only
        * 20XX: less than retail rate
    * *How quickly can your organization implement one (or more) new GPP "rates"?*

* TVA implemented option for third-party administrator option to issue check for the premium portion to reduce programming burden on LPCs

# Prepare for Evolving Back Office Needs

* Create an Application for Interconnection
    * Initially, there was no MLGW-specific application, just the TVA GPP Participation Agreement
    * Now, MLGW has universal application (PDF) regardless of option chosen
* Create an Interconnection and Parallel Operation Agreement
    * None initially, then implemented a TVA template, which evolved to add insurance requirement and now MLGW has a universal agreement regardless of option chosen
    * Requires modification when participant is a government entity
    * Requires new agreement when customer-of-record changes
* *Customers and installers prefer these documents be web forms, not PDFs to print, fill-out and return. How quickly can your utility offer this?*

http://www.mlgw.com/about/greenpowerswitchdocs

# Prepare for Ongoing Customer Account Maintenance

* Proactive programming can help avoid a lot of problems and customer frustration
  * Implement ways to identify solar generation customers (and, more specifically, the generation meters) easily
    * Customer Information System (CIS)
    * Other internal systems
  * Implement ways to identify changes in customer-of-record at solar generation sites
    * Create process to trigger necessary updates to documents and accounts in timely manner
  * Implement ways to identify potential issues with solar meter readings
    * Meter readings of zero
    * Irregularities in grid-supplied consumption
* *Does your organization have established processes for handling adjustments, back billing and other needs when these issues are found?*

# Prepare for New Policies regarding Distributed Generation

* MLGW instituted policies in 2017
  * Unauthorized generation can result in disconnection of customer's electric service
    * Established specific steps and timelines for unauthorized systems to be submitted, reviewed, reworked (if necessary) and approved
  * Potential to claw-back portion of construction incentives if a new or expanding commercial/industrial customer does not reveal plans for self-generation during planning stages
    * MLGW applies gross margin allowance based on submitted usage data; self-generation reduces that usage level

http://www.mlgw.com/images/content/files/pdf/ServicePolicyManual.pdf

# Prepare for New Policies to Avoid Cross-Subsidization

* MLGW instituted charges in 2017
    * Application fee
        * ~66% of approved applications never proceed to construction but required significant processing and engineering review time
        * Fee ensures commitment (follows optional TVA GPP fee structure, but no maximum)
            * Residential is $250 +$5 per kW
            * Non-residential is $500 + $5 per kW
        * Interconnection study fee ($50,000 deposit) applies for large projects
    * Monthly customer metering charge for options other than Green Power Providers
    * System Acceptance Test fee ($200 per attempt)

http://www.mlgw.com/images/content/files/pdf/ScheduleofCharges.pdf

# Prepare for Tomorrow...Today

* Cultivate on-staff "experts" who can research and explain options
    * Positions LPC as the "trusted energy advisor"
    * Gives solar installers a consistent point of contact
* Prepare for increased interest from customers and developers
    * Create or update utility processes to handle questions, project applications, requests for large-scale interconnection
    * Communicate with local Code Enforcement
    * Assign resources to write code for billing and ongoing account maintenance; application process automation; project tracking
    * Create policies, documents and fees because...

Here comes the sun!