

# SUSTAINABILITY AND TRANSPORTATION COMMITTEE MINUTES

June 8, 2023

The Sustainability and Transportation Committee of the City of Mesa met in the lower-level meeting room of the Council Chambers, 57 East 1st Street, on June 8, 2023, at 9:00 a.m.

## COMMITTEE PRESENT

Alicia Goforth, Chairperson\*  
Francisco Heredia

## COMMITTEE ABSENT

Jennifer Duff

## STAFF PRESENT

Marc Heirshberg  
Holly Moseley  
Jack Vincent

(\*Participated in the meeting through the use of video conference equipment.)

Chairperson Goforth conducted a roll call.

Chairperson Goforth excused Committeemember Duff from the entire meeting.

### 1. Items from citizens present.

There were no items from citizens present.

### 2-a. Hear a presentation, discuss, and receive an update on Mesa's electric utility power portfolio including local generation projects and associated property acquisition.

Energy Resources Program Manager Tony Cadorin introduced Electrical Engineer I James Bowles and displayed a PowerPoint presentation. **(See Attachment 1)**

Mr. Cadorin gave an update of the Power Portfolio in the City of Mesa. He explained terminology related to the metrics of the power scales such as capacity factor, which is how much a particular power plant puts out in comparison to their size and how much a particular asset is used. He indicated the City system is growing in terms of customer count, but not system demand. He suggested customers are becoming more power efficient. (See Page 2 of Attachment 1)

Mr. Cadorin reported that power plants are retiring or being taken offline every year. He noted most are in California which will directly affect Mesa. He named the power plants that will be retiring and how that will affect the power grid. (See Page 3 of Attachment 1)

Mr. Cadorin stated that along with the power source retirements, more renewable power resources will be added in the next 10 to 15 years. He explained the older power plants have a greater capacity factor than the renewable resource plants which creates a possible grid

instability called the Demand at Risk Factor. He added while the City is in a good position at this time, it is important to plan and be prepared for the possibility of load loss in the future. (See Pages 4 and 5 Attachment 1)

Mr. Cadarin reported that the City utilizes local utilities such as Salt River Project (SRP) and Arizona Public Service (APS) as role models for structuring its power portfolio. He elaborated that SRP has begun to withdraw from the power purchasing market and have internalized their process to produce their own power and has lessened power sales to other utilities. He remarked APS is seeing similar things including a lot of load growth and the addition of intermittent resources. He continued by saying that the power market remains challenging for Mesa and staff will start to shift to utilizing renewable resources in addition to using its own natural gas system. (See Pages 6 and 7 of Attachment 1)

Mr. Cadarin provided examples of the ways Mesa is expanding its power supply portfolio . (See Page 8 of Attachment 1)

In response to a question from Committeemember Heredia question, Mr. Cadarin stated that there is a decrease in the hydro resources and described the City's contracts with Colorado River Storage Project and Parker Davis. He noted the City is discussing water conservation and the power conversation will follow. He said the percentage of hydro power the City is contracted for will remain the same; the difference will be how much is derived from water versus how much is purchased on the market.

Responding to a question posed by Chairperson Goforth, Mr. Cadarin stated that not all the power is purchased a day ahead of time. He discussed the City's current contracts and acknowledged they do not all end in the same season; it is important that they do not all have the same market exposure at the same time.

Mr. Cadarin discussed the local dynamic resources, announcing the first project the City will construct is called the PD microgrid. He said the PD microgrid is a set of generators to be installed at the City of Mesa Public Safety Campus. He explained if during normal business hours it is determined to be less costly to run the generators than to purchase power, then the microgrid will be utilized to reduce market purchases. He advised if a large power outage occurs, the microgrid will isolate itself and the generators will support the most critical City facilities during the outage. He added when not serving the City, the microgrid will be making power for the electric market customers, essentially paying for itself over its lifetime. (See Page 9 of Attachment 1)

In response to multiple questions from Committeemember Heredia, Mr. Cadarin stated that staff believes this microgrid is a proof of concept and would look to construct others if proven successful. He discussed funding and the cost of the generators.

In response to a question from Chairperson Goforth, Mr. Cadarin listed other possible locations that would benefit from a microgrid would be near City buildings Downtown, and the 6th Street Campus.

Mr. Cadarin continued the discussion of local dynamic resources. He reported that the City recently purchased 9.3 acres near the Rogers Substation, where the City receives all of the power for its utility customers. He proposed the site would be a good opportunity to develop larger energy resources and staff is evaluating options. (See Page 10 of Attachment 1)

Mr. Cadarin explained that staff created a very complex model used to consider best ways to optimize the portfolio. He reviewed the modeling results and recognized solar as the cheapest resource to purchase. He added the model predictions show 40% to 63% renewable resources. (See Pages 11 and 12 of Attachment 1)

Responding to a question from Chairperson Goforth, Mr. Cadarin emphasized the importance of having flexibility in resources and provided an example to the benefit of gas generators. He noted battery storage can do the same thing to a limited extent but is more expensive.

Mr. Cadarin provided additional concepts and discussed solar peak times and power load peak times. He identified the mismatch of solar and the advantageous access to natural gas. (See Pages 13 through 16 of Attachment 1)

In response to a question by Committeemember Heredia, Mr. Cadarin said that the City has approached SRP to address interest in partnering on the microgrids and will continue those discussions.

In response to a question posed by Chairperson Goforth, Mr. Cadarin explained how the Flare to Fuel project fits into the project.

Mr. Cadarin commented that microgrids are good candidates for federal grants and staff is actively pursuing grant dollars.

Chairperson Goforth thanked staff for the presentation.

2-b. Hear a presentation, discuss, and receive an update on the Trees are Cool initiative.

Deputy Director of Environmental and Sustainability Laura Hyneman introduced Energy and Water Conservation Coordinator Donna DiFrancesco and displayed a PowerPoint presentation. **(See Attachment 2)**

Ms. DiFrancesco provided an overview on the Trees are Cool Initiative. She illustrated a timeline of events leading to the Initiative. She gave an overview of the programs that enabled staff to be more involved, including the Climate Action Plan. She commented that the city-owned trees and the green infrastructure are considered City assets. She described the Green Stormwater Infrastructure Program. (See Pages 2 through 4 of Attachment 2)

Ms. Hyneman highlighted initiatives established by City Council including the Climate Action Plan in 2021, accelerating the community for electric vehicles in 2022, the Million Tree Initiative in 2023. She discussed the ways staff is working to meet the goal of planting one million trees by the year 2050. (See Pages 5 and 6 of Attachment 2)

Ms. DiFrancesco provided details of the West Mesa Heat Action Project. She outlined how trees relate to all six Climate Action Plan focus areas. (See Page 7 of Attachment 2)

Ms. DiFrancesco explained the science behind Mesa's Million Tree challenge. She reported that a preliminary assessment showed Mesa has 6.3% canopy cover with the goal of reaching 15%. She announced that the City has launched a new interactive website where citizens and businesses can register newly planted trees to help increase the city's tree count. She shared the link on the website where citizens can view all of the new (See Pages 8 through 11 of Attachment 2)

Ms. DiFrancesco stated that the momentum for the project has been exciting. She outlined the number of trees that were planted in the city during the planting initiatives. She highlighted several volunteer events where staff handed out tree seedlings. (See Pages 12 through 17 of Attachment 2)

Ms. Hyneman shared that her department is adding an Urban Forester position who will establish a tree and shade plan and develop an urban forest protection policy and code. (See Page 18 of Attachment 2)

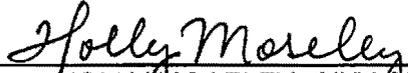
Ms. Hyneman announced upcoming tree distribution events She noted the planting projects planned throughout the city. She added that staff is working on submitting grant proposals and has been working with partners to identify grant opportunities. (See Pages 19 through 22 of Attachment 2)

Chairperson Goforth thanked staff for the presentation.

3. Adjournment.

Without objection, the Sustainability and Transportation Committee meeting adjourned at 10:18 a.m.

I hereby certify that the foregoing minutes are a true and correct copy of the minutes of the Sustainability and Transportation Committee meeting of Mesa, Arizona, held on the 8<sup>th</sup> day of June 2023. I further certify that the meeting was duly called and held and that a quorum was present.

  
\_\_\_\_\_  
HOLLY MOSELEY, CITY CLERK

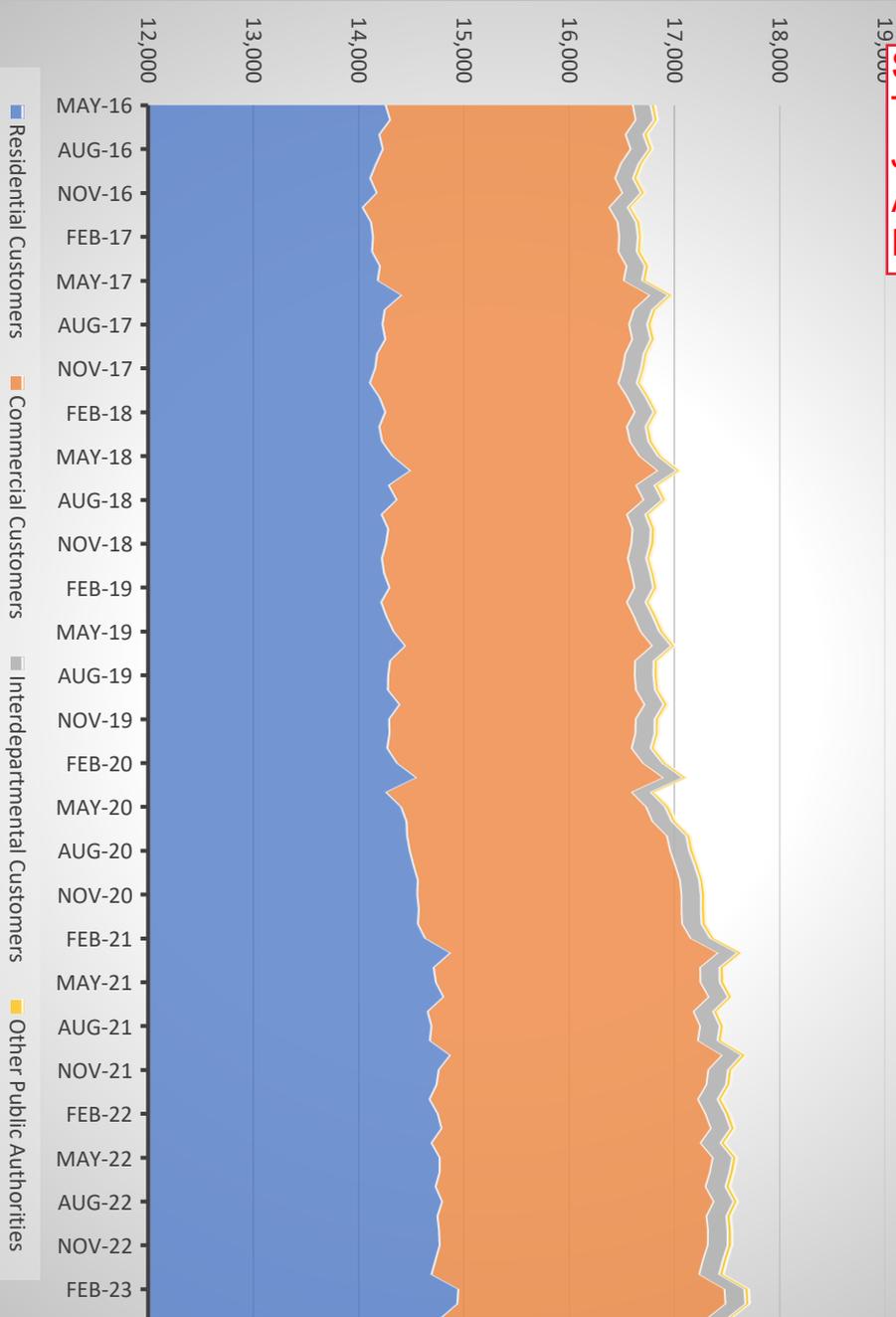
sr  
(Attachment – 2)

# Power Portfolio Update

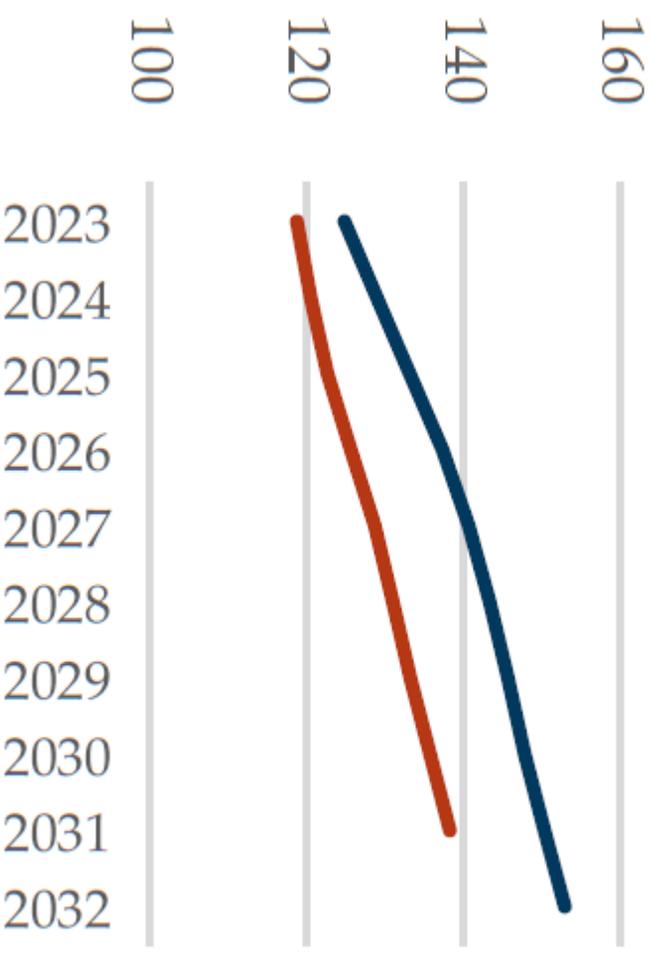
Energy Resources Department, 6/8/2023

# System and Regional Growth

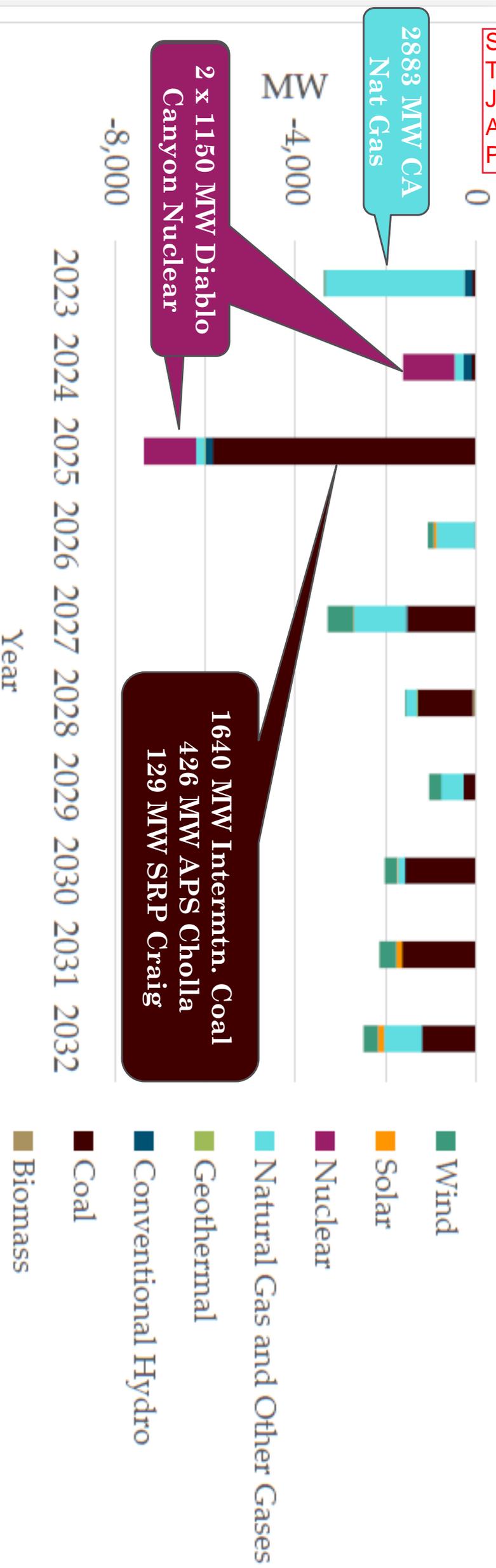
City of Mesa Electric Customer Count



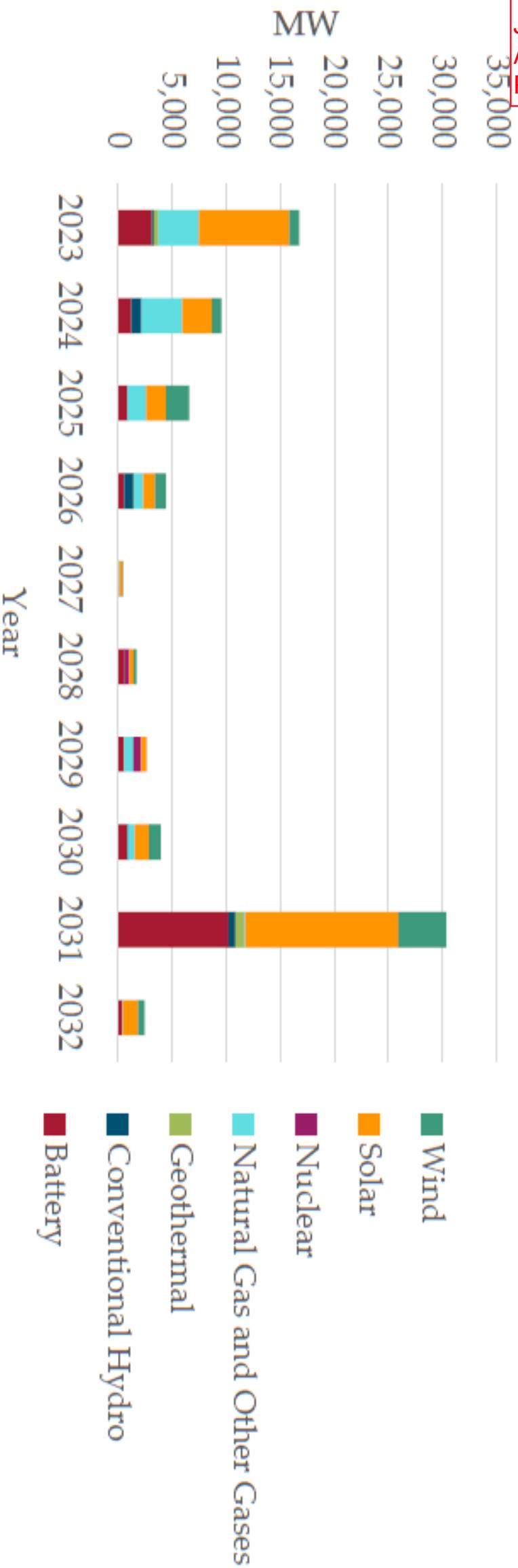
Desert Southwest Load Growth: Peak MW



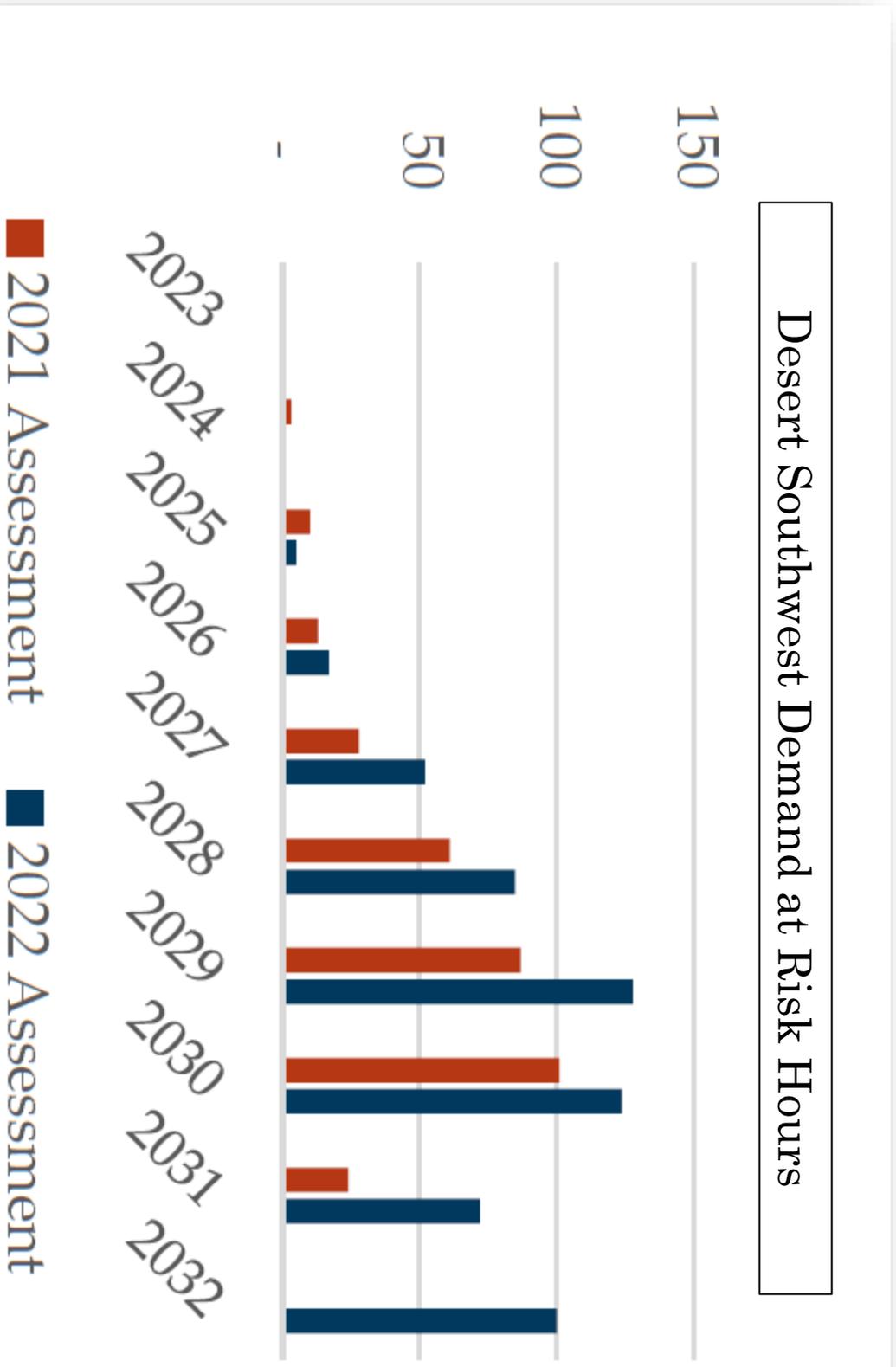
# Resource Retirements



# Resource Additions



**Demand at Risk**  
**Indicator (DRI):**  
Number of hours when grid stability is at risk out of 8,760 total hours per year



# SRP and APS 2018-23

- **SRP Reduced:**
  - Purchased power: 1,399 MW to 0 MW
  - Wholesale sales: 1,151 MW to 88 MW
- **SRP Increased:**
  - Renewable generation: 591 MW to 1,228 MW
  - Peak load forecast: 7,227 MW to 7,747 MW
- **APS Increased:**
  - Renewable generation: 512 MW to 669 MW
  - Peak load forecast: 7,165 MW to 8,184 MW

# What does this mean for Mesa?

- The power “market” remains challenging to rely on
- Utilize our strengths
  - Great at contracting for power through competitive RFP
  - Own a natural gas distribution system
- Continue progression towards:
  - Inexpensive renewable resources
  - Flexible, reliable generation resources to supplement renewables

# Power Supply Portfolio

## Utility Scale Renewable Resources



SRP – Mesa Renew.  
Energy Project (16%)



Additional Utility  
Solar via RFP

## 2. Local Renewable Resources



Downtown Solar 1:  
804 kW (0.4%)



Downtown Solar 2:  
~2,500 kW (0.9%)



Customer Solar:  
~1,700 kW (0.9-1.7%)

## 5. Market & Hydro Resources



Colorado  
River Storage  
Project (5%)



Parker-Davis  
Project (15%)



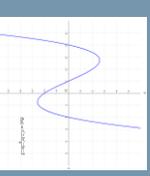
Wholesale  
Market



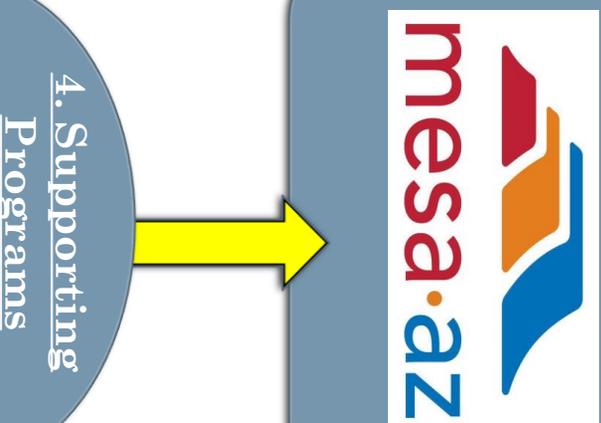
PD Microgrid  
(4-6%)



Rogers  
Generation  
Project



Additional  
Resources/  
Microgrids



## 4. Supporting Programs



# PD Microgrid

**Normal Operation**  
~ 3 MW Natural Gas  
Generation  
2,000 – 6,000 Hours/year  
4-6% of Annual Energy  
Requirements  
**Large Power Outage:**  
“Backup” Entire PD Campus



# Rogers Generation Project

Esportia Fitness

Battery Energy  
Storage System  
(BESS)?

Electric  
Substation?

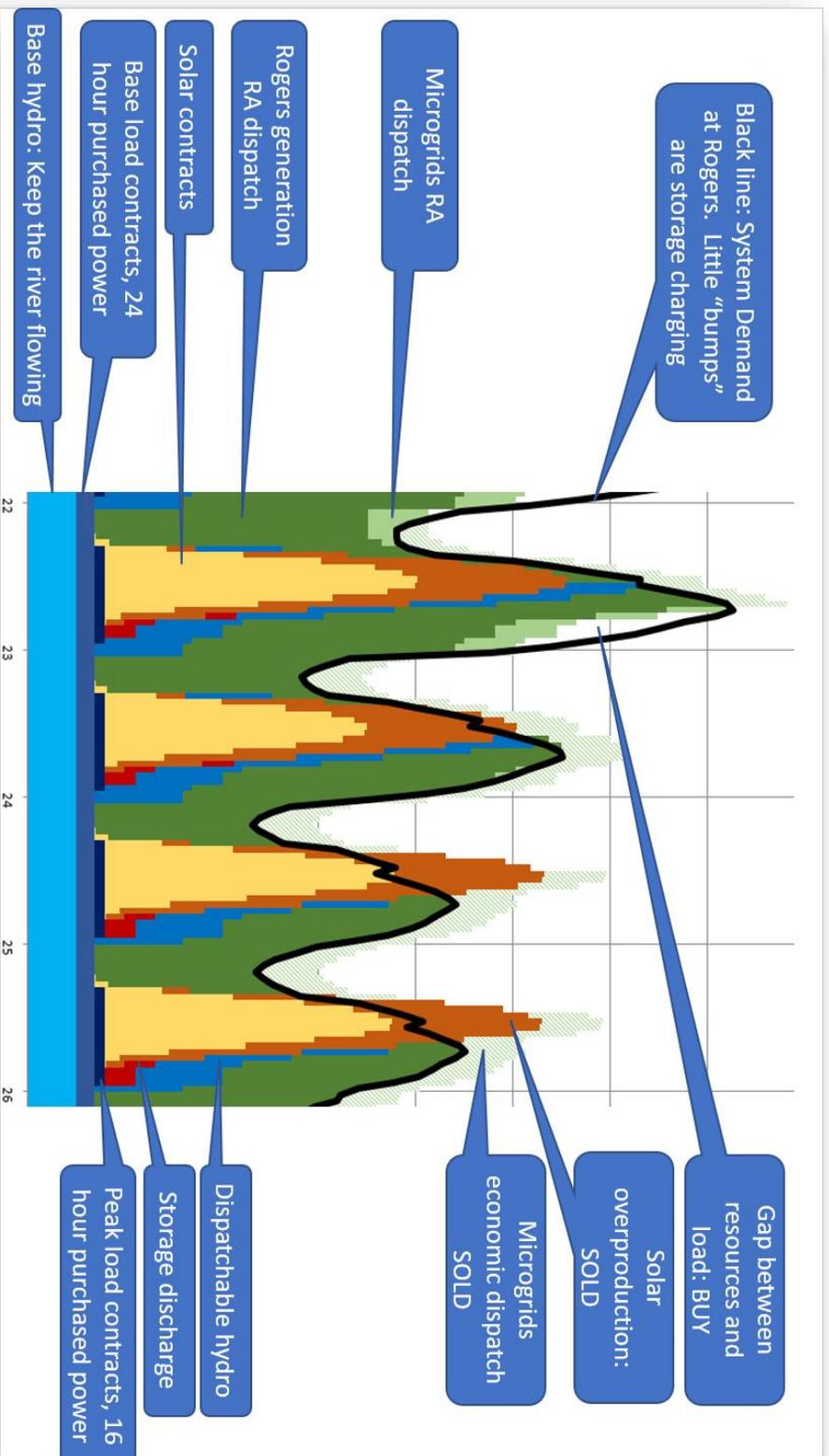
Natural Gas  
Generation?



**FOR DISCUSSION PURPOSES ONLY**

# Local Dynamic Resources

- Modeling is very complex, but we're seeking to optimize the portfolio



# Local Dynamic Resources

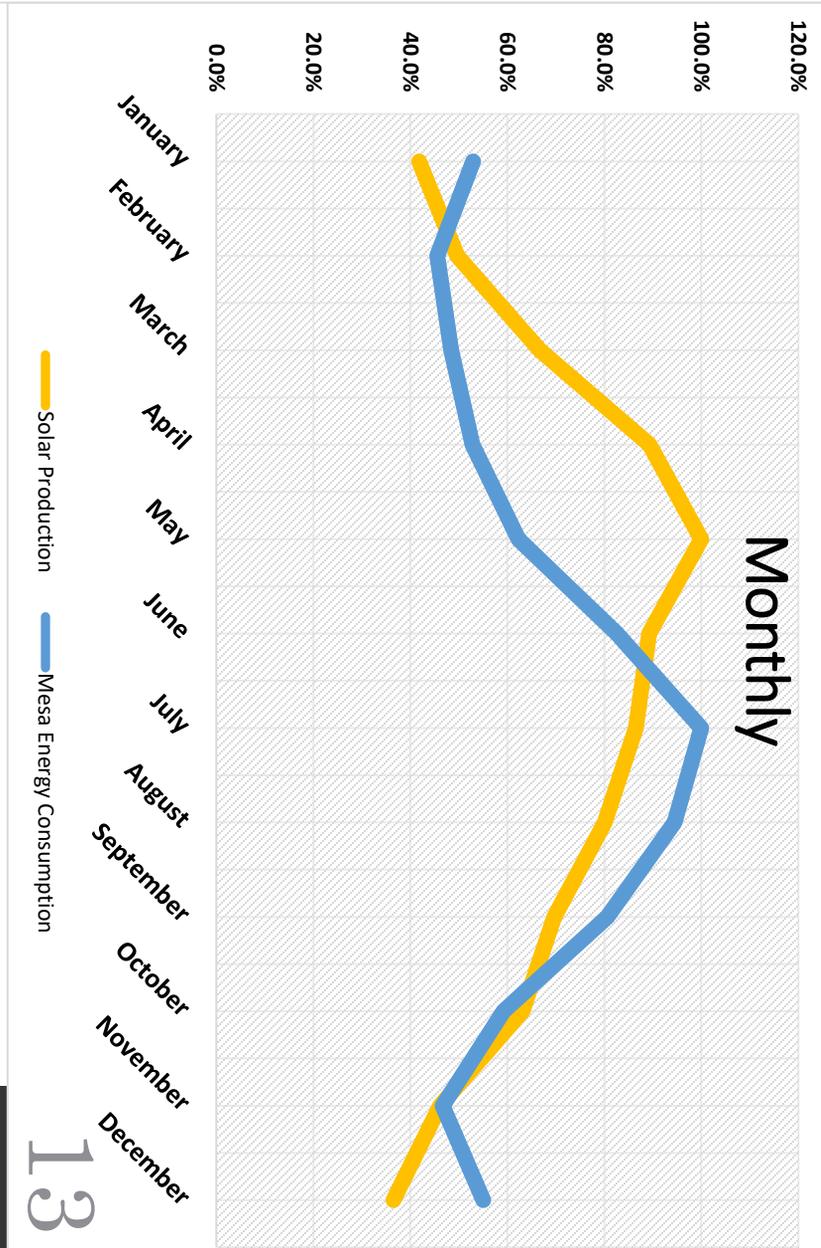
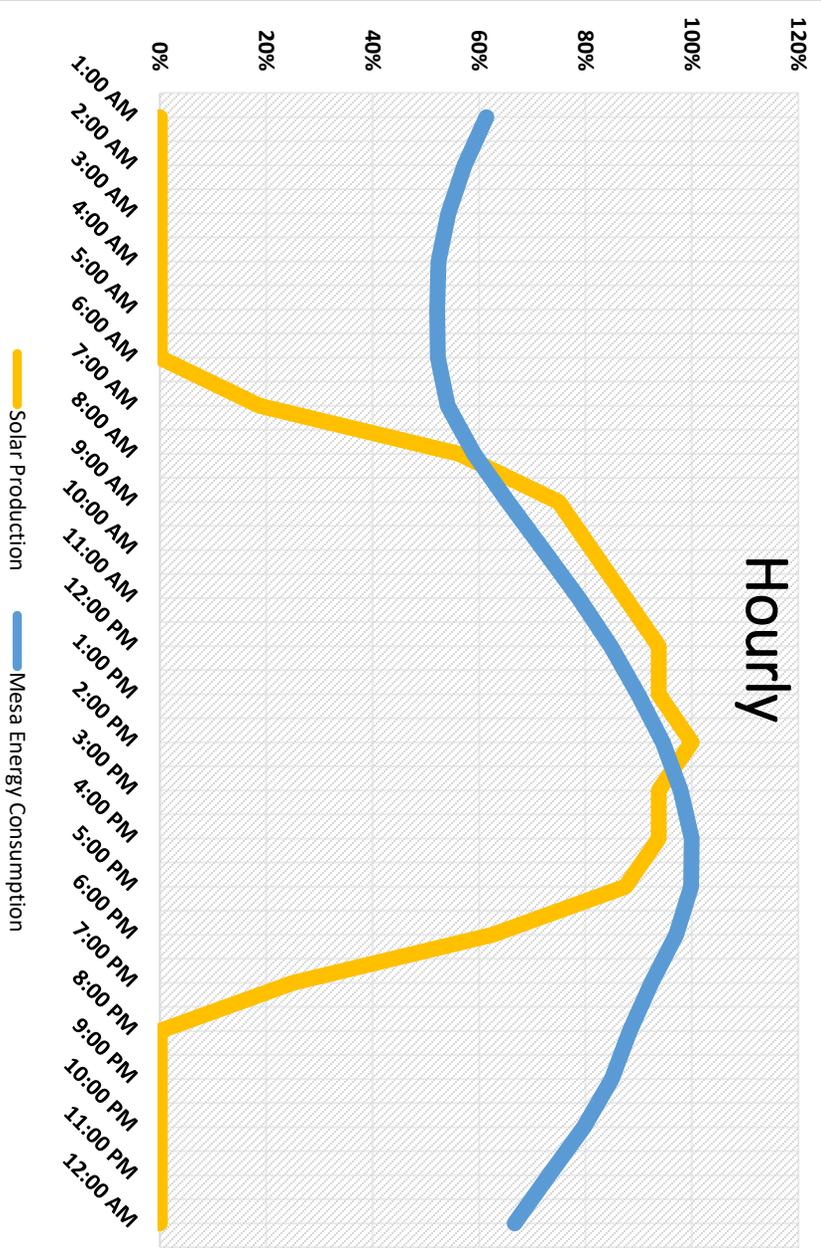
- Modeling results to date:

	No Generation Added	With 30 MW of Generation Added
Amount of Additional Solar to Add to Portfolio	4-7 MW	42 – 46 MW
Amount of Additional Storage Added	12 – 17 MW	4 – 6 MW
Average Total Portfolio Cost	\$75 - \$80/MWh	\$57 – \$62/MWh
% Renewable	~40%	~63%



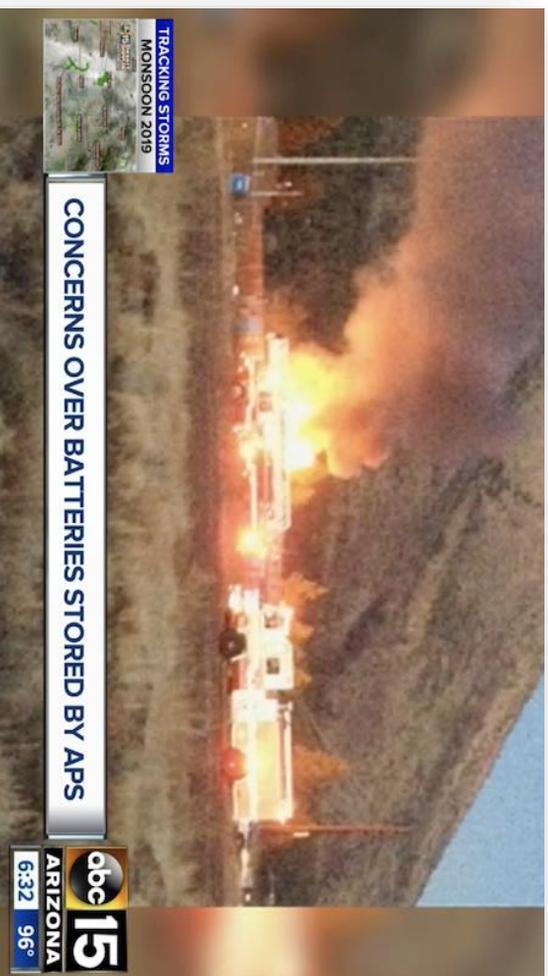
# More Natural Gas Generation?

- Why?
- Mismatch of solar

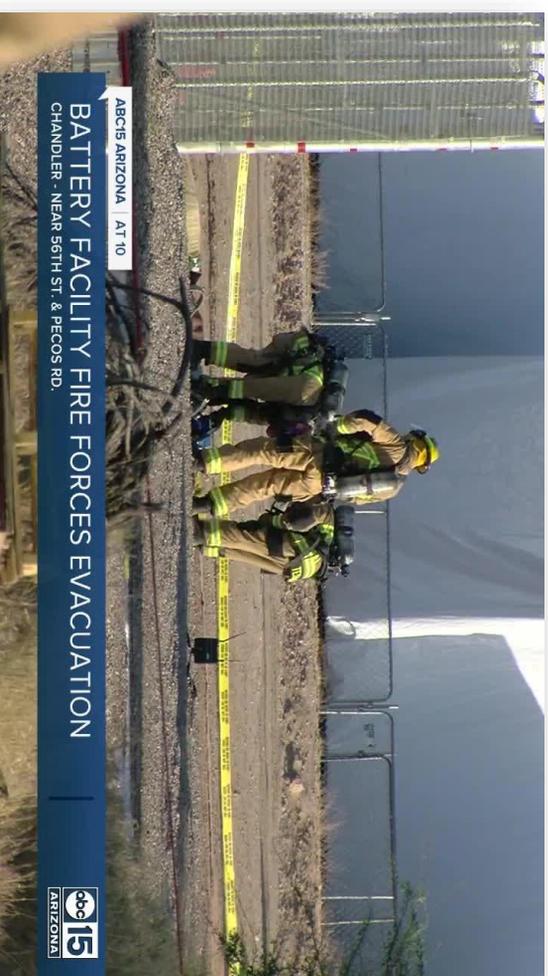


# More Natural Gas Generation?

- Why?
- Mismatch of solar
- Storage is (still) very expensive to build



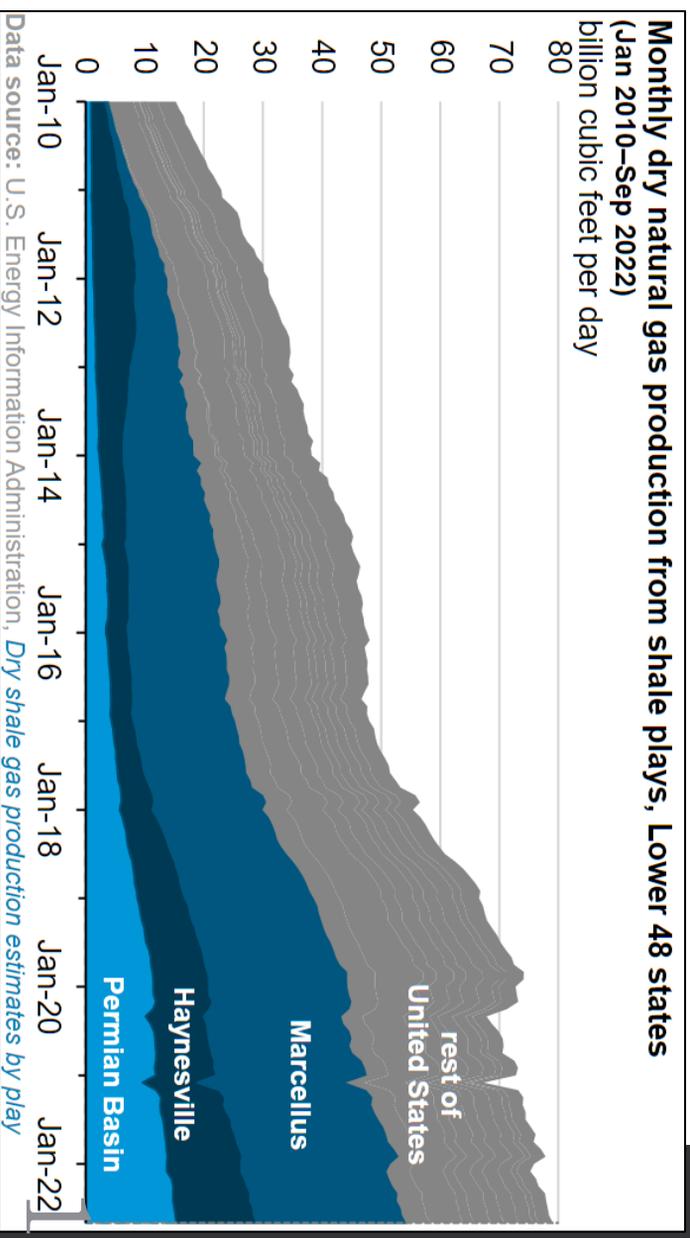
APS Surprise Battery Storage 2020: 9 Fire  
Personnel Injured



SRP AES Chandler Battery Storage: 2+  
Week Fire

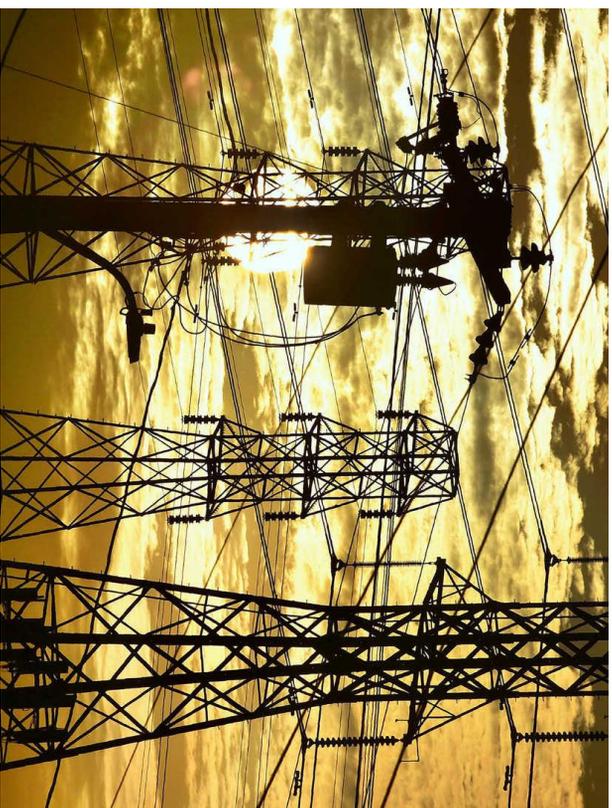
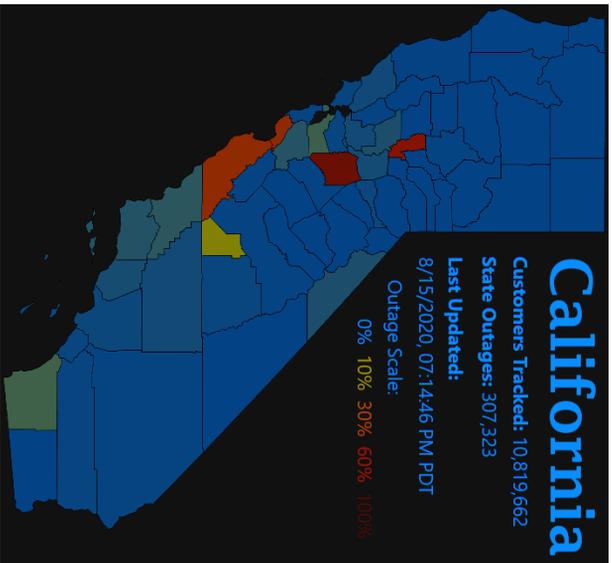
# More Natural Gas Generation?

- Why?
- Mismatch of solar
- Storage is (still) very expensive to build
- Mesa has advantageous access to natural gas
- Transmission is a challenge
- Supply is inexpensive and plentiful
- Permian Basin is second largest gas producer in the country



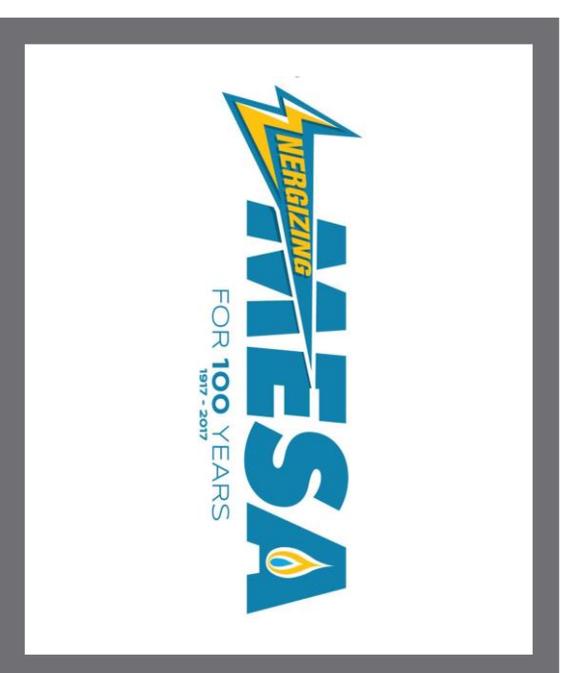
# More Natural Gas Generation?

- Why?
- Mismatch of solar
- Storage is (still) very expensive to build
- Mesa has advantageous access to natural gas
- Natural gas provides stability against renewables' variability



# Moving Forward

- PD Microgrid In Progress
  - ~3 MW of natural gas generation
  - 4-6% of annual energy supplies
- Rogers Generation Site Under Study
- Additional Microgrid(s) Under Study



m.e.s.a.az





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# SAT Committee

June 8, 2023

Laura Hyneman &

Donna DiFrancesco

Environmental & Sustainability Department



# How we got here

2021 Mesa  
Climate Action  
Plan

2010 Tree City  
USA  
Designation

1984-Present  
Promoting  
Xeriscape

2023 Million  
Tree Initiative

2013/14  
Began  
Installation of  
Green  
Stormwater  
Infrastructure

2009  
Environmental  
&  
Sustainability  
Created







SOTC 2021  
Climate Action Plan

# SOTC 2023 Million Tree Initiative





**Quercus virginiana**

This ball-shade tree is thornless and evergreen. It is slow growing and low maintenance. Be sure to consider mature size.

**Select this tree...**

- For large planting areas
- As a shade tree for your home (if space allowed)
- For golf courses, resorts, and parks
- To provide dense cover for wildlife

**AT-A-GLANCE**

Size	40' tall x 50' wide
Flower Color	Green, non-showy
Flower Season	Spring
Foliage	Evergreen
Water	Low water use
Special Features	Adapts to conditions
Native to	Texas and Southeastern U.S.



SOTC, Feb. 7, gave away  
 300 tree seedlings



999,700 to go!

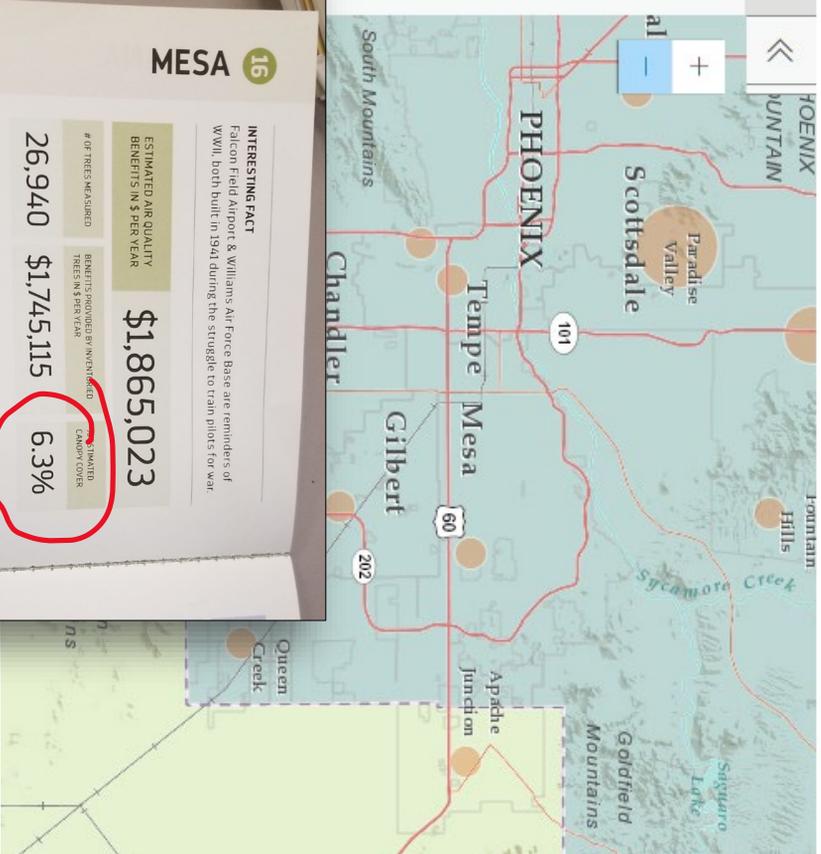
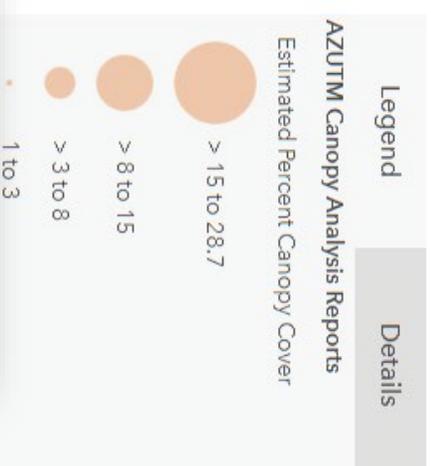
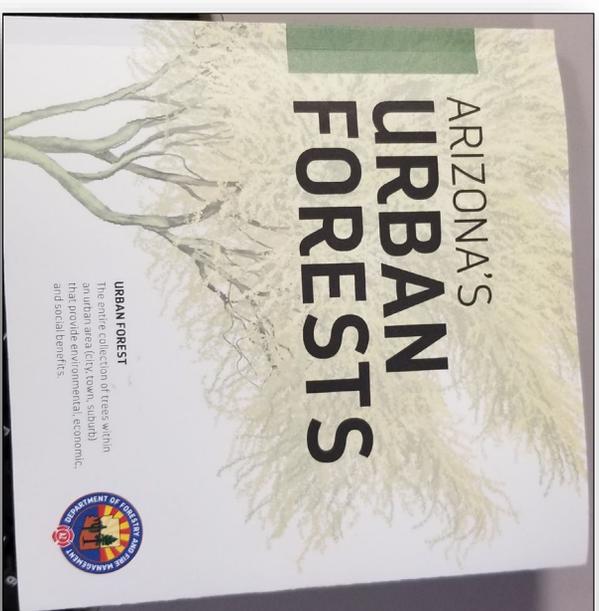


# Canopy Cover Behind Mesa's Million Tree Challenge

Arizona Department of Forestry and Fire Management Canopy Map

- Preliminary assessment at 6.3%
- Canopy cover for Sonoran Desert, 15%
- Setting a goal at one million to be planted by 2050

[Arizona Urban Canopy Map](#)



**MESA 16**

**INTERESTING FACT**  
Falcon Field Airport & Williams Air Force Base are reminders of WWII, both built in 1941 during the struggle to train pilots for war.

**ESTIMATED AIR QUALITY BENEFITS IN \$ PER YEAR**  
**\$1,865,023**

**# OF TREES MEASURED**  
26,940

**BENEFITS PROVIDED BY MEASURED TREES IN PER YEAR**  
**\$1,745,115**

**UNPLANTED CANOPY COVER**  
**6.3%**

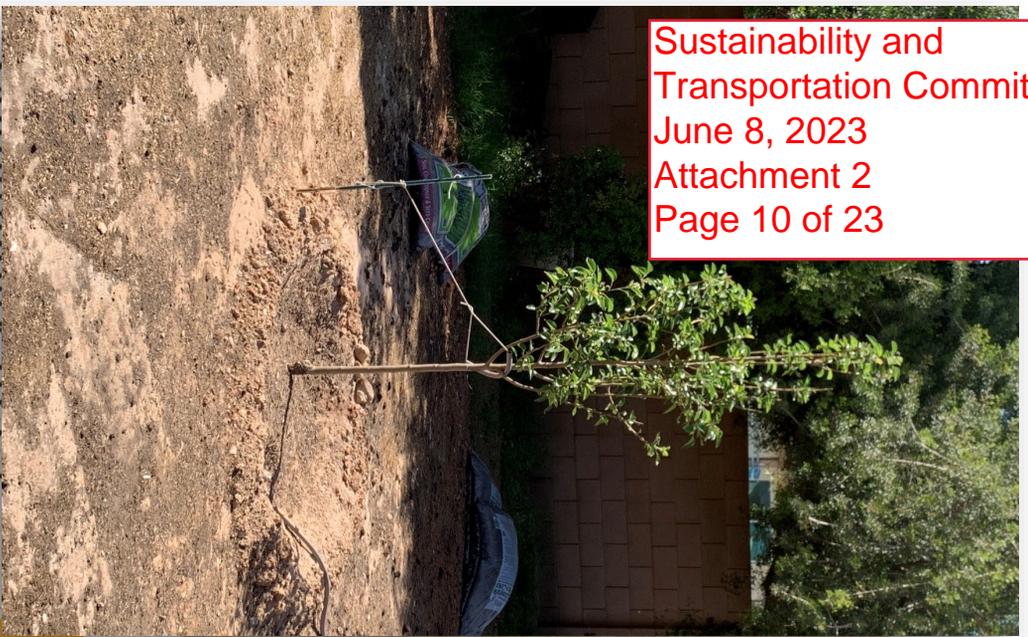
**COUNTY**  
Maricopa

**TOTAL AREA**  
133.13 sq mi

**POPULATION**  
460,950

**ELEVATION**  
1,243 ft





328



Top 10 Community Trees Species Names

City-Owned Trees

26.7k

# mentum from Million Tree Initiative

## antings

- 1 Tree, Celebrate Mesa: Living Green Village
- 6 Trees, Emerald Park for National Volunteer Week Proclamation
- 20 Trees, Skyline Park
- 27 Trees Planted by Volunteers in Mesa Parks for Arbor Day

## Tree Seedling Giveaways

- Feb 7 – 300 Tree Seedling – State of the City
  - March 24 – 20 Tree Seedling Giveaway –Customer Appreciation at Spring Training Event – Solid Waste
  - April 4 – 100 Tree Seedling Giveaway – Mesa Main Library, Heat-Proof Desert Gardening talk
  - April 8 – 50 Tree Seedling Giveaway – Dobson Library, Creative Container Gardening talk
  - April 26 – 40 Tree Seedling Giveaway – 6th grade STEM Chief Innovation Officers, City Manager’s Office
  - April 28 – 75 Tree Seedling Giveaway for Arbor Day – Arbor Day Celebration, Red Mountain Library
- 585 Tree Seedlings Distributed

## Those who have reached out to us about Trees Are Cool since SOTC:

City Departments, Boeing, Shutterfly, PricewaterhouseCoopers (PwC), AT&T Fiber, Google Fiber, Superstition Springs Center, Arizona Nursery Association, Moon Valley Nurseries, V&P Wholesale Nursery

## Great attention by the press





Dobson Ranch Library Tree Seedling Giveaway, April 8

**DESERT WILLOW**  
*Chiopsis linearis*

This small tree has beautiful flowers and no thorns. Ask the nursery for variations of color and form.

**Select this tree...**

- For streets, medians, or other limited planting areas
- To attract hummingbirds and pollinators
- As a medium accent or patio tree
- To cast summer shade and let in winter sun

**AT-A-GLANCE**

Size:	25 tall x 20 wide
Flower Color:	White, pink, or purple
Flower Season:	Spring to fall
Foliage:	Deciduous
Water:	Low water use
Special Features:	Attracts Hummingbirds, Thornless
Native to:	Southwest US & Mexico

CITY OF MESA CLIMATE ACTION PLAN FOR A SUSTAINABLE COMMUNITY  
 MESA.ORG/CLIMATEACTION





Emerald Park Tree Planting, April 19  
PriceWaterhouseCoopers

butterfly, Skyline High School,  
Sustainability Alliance, West Coast Arborist



Skyline Park Tree Planting, April 25



Skyline High School Students with Trees Are Cool Shirts



# Looking Ahead: Staffing

## Urban Forester

- Subject matter expert
- Urban forest assessment/tree inventory
- Tree & Shade Plan
- Urban forest protection policies and codes
- Green stormwater infrastructure – growing without straining water resources
- Community education and planting projects
- Increase private urban forest investment
- Regional committees
- Manage grants/programs



# Looking Ahead: Events

## Tree Distribution Events

Electric Service Area and Citywide

- Four events per year (spring and fall)
- Two for Electric Service Area
- Two Citywide
- 600 5-gallon trees (150 per event)



# Looking Ahead: Working in the Community

## Planting Projects

- Streets
- Parks
- City Buildings
- Transit Spaces

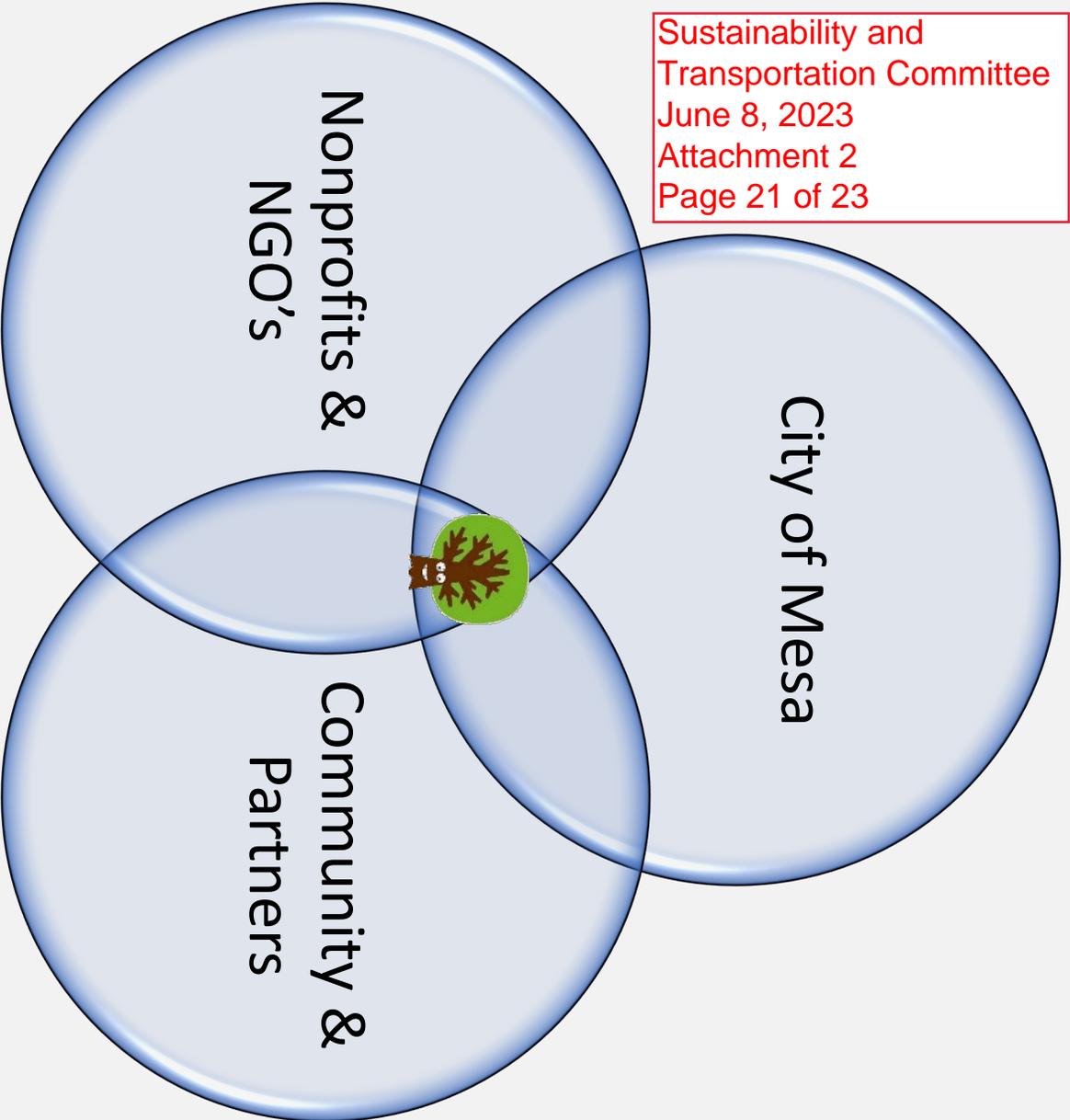


# Looking Ahead: Working in the Community

## Proposed Grants & Appropriations

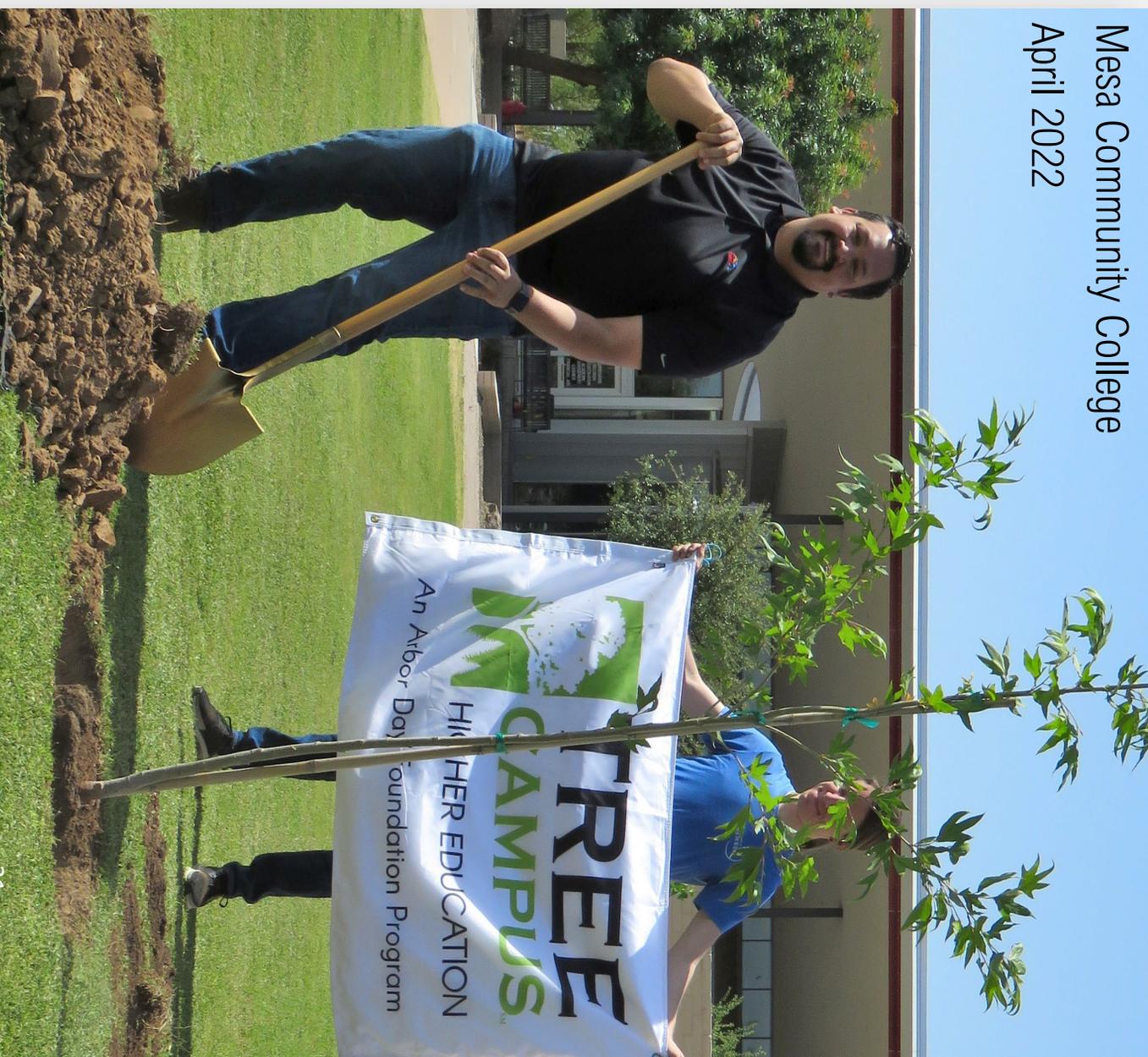
- Senator Sinema Appropriation
- ASU IRA USDA Grant Proposal –  
Neighborhoods
- MPS IRA USDA Grant Proposal –  
Partnership for trees in schools
- State DFFM Grant Opportunities

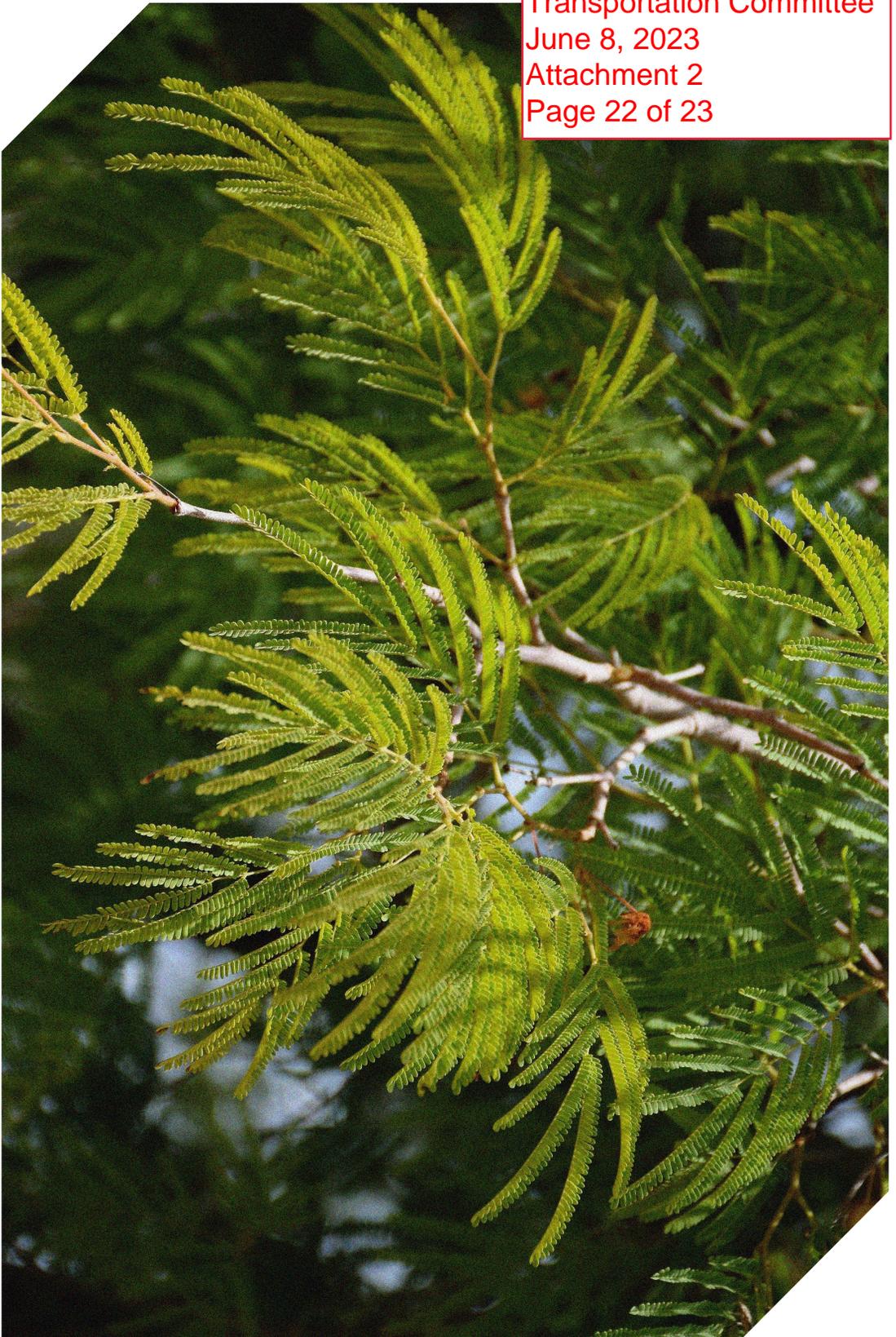




Mesa Community College

April 2022





CITY OF MESA CLIMATE ACTION PLAN: FOR A SUSTAINABLE COMMUNITY

MESA.AZ.GOV/CLIMATEACTION

WHAT  
COOL  
IDEAS DO  
YOU HAVE?



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