



Photo: Roberto Rosales

Climate Ready Trees for Albuquerque's Community Forest

Albuquerque's Context

- 200 sq miles
- 1.5M trees estimated
- <10% Canopy cover
- Siberian Elm most common
- 60% below 6"
- Severe heat island



Urban Forestry Policy Shift + Tree Goal

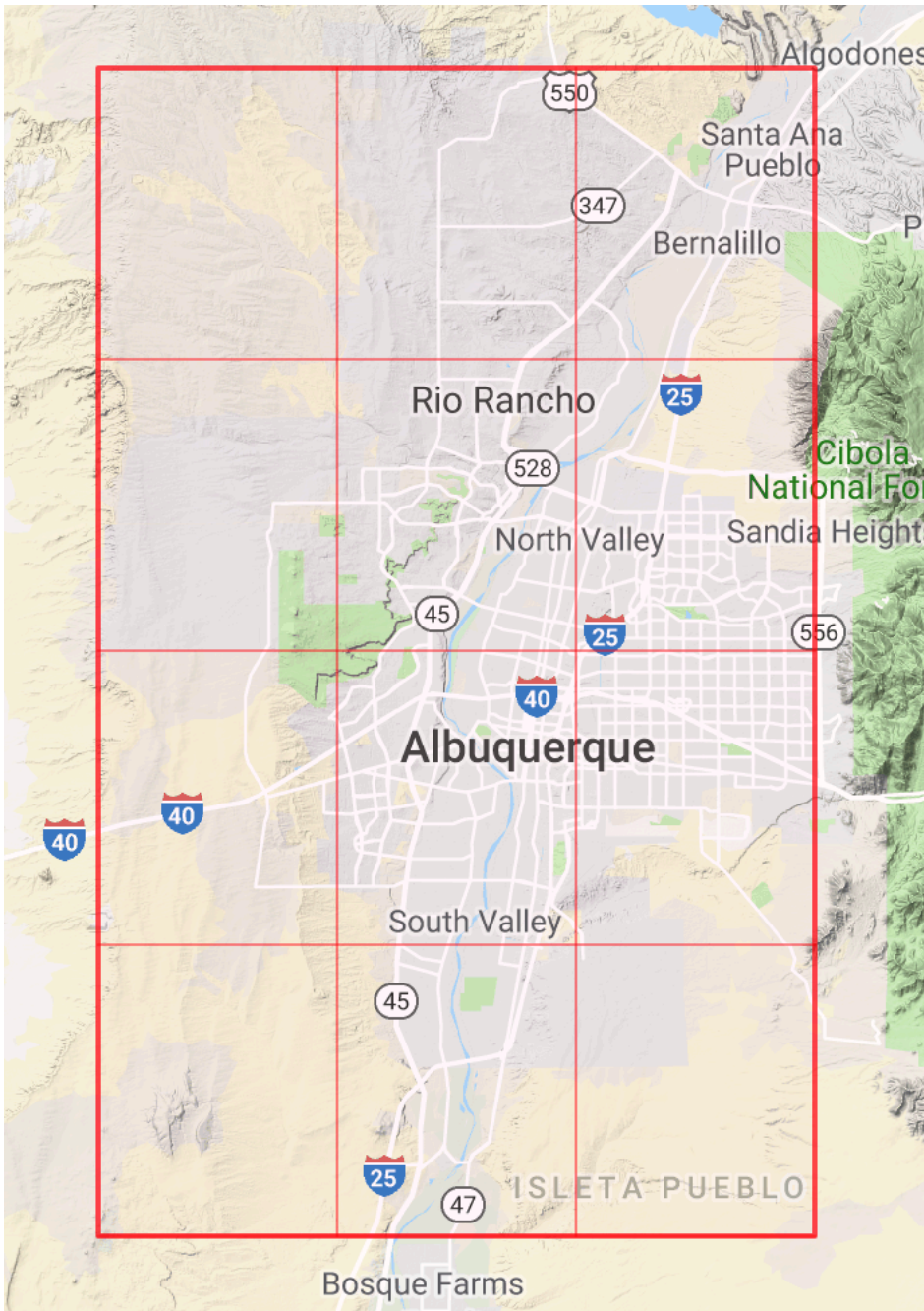


Who was Invited?

- NM State Forestry – Native Tree Nursery
- Albuquerque Parks and Rec – City Forester
- Local Nursery – Trees of Corrales
- State Urban & Community Forest Program Manager
- Tree Physiologists (University Researchers)
- Native Plant Society
- Landscape Architects/Designers/Builders
- Non-profits
- Water Authority



Photo: Roberto Rosales



We used Downscaled CMIP5 Climate and Hydrology Projections and requested RCP8.5 data from Bias-Correction Spatial Disaggregation climate monthly models.

Data is averaged from 39 models for this area over Albuquerque.

In other words: We requested data from climate models across the globe that are utilized in IPCC reports. The scenario influencing the climate in these models is “business as usual.”

Mid-century = El Paso, TX
End of Century = Tucson, AZ

Annual precipitation = 8.62 inches

Our Process

Evaluate Climate Trends & Exposures

- Convene experts to identify the criteria for evaluation

Identify Promising Species

- Develop a master species list to evaluate with experts

Score Species & Select Finalists

- Habitat suitability

- Physiological tolerance

- Biological interactions

- Uncertainty

- Availability & other factors



Photo: Roberto Rosales

Criteria Scoring

Soil type tolerance

+1 = sand, clay, loam, silt (3+ types);

0 = two of these types;

-1 = less than 2 of these types



Photo: Roberto Rosales

*Add comment in Bonus Columns if requires well-drained soil, or tolerant of urban compaction, or tolerant of alkaline soils

Criteria Scoring

Drought tolerance

+1 = yes, or high tolerance

0 = medium or relatively

-1 = no, or low tolerance



Photo: Roberto Rosales

Criteria Scoring

Extreme Temperature Tolerance (Next 30 Years) - All scored based on USDA Hardiness zones, unless species specific data is listed.

Tolerance of heat

+1 = if Zone 8 is included or up to 105 degrees F,

-1 = if Zone 7 or lower, or less than 105 degrees F

Tolerance of cold

+1 = USDA hardiness zone 7 or lower (tolerant of ABQ now)

-1 = USDA hardiness zone 8 or higher (not tolerant of ABQ now)

Criteria Scoring

Extreme Temperature Tolerance (2060-2099+)

Tolerance of heat

+1 = if Zone 9 is included or up to 120 degrees F

-1 = if Zone 8 or lower or <120 degrees F

Tolerance of cold

+1 = USDA hardiness zone 8 included (tolerant of El Paso now),

-1 = USDA hardiness zone 9 and higher (not tolerant of Tucson now)

Criteria Scoring

Bonus Columns:

- Flooding tolerance
- Urban compaction tolerance
- Alkaline Soil Tolerance
- Well-drained soil requirement
- Pests/disease susceptibility
- Allergens/ Toxic parts
- Management requirements (pruning, tree litter, etc.)
- Branch attachment strength/ prone to breakage
- Edible parts
- Attractiveness (fragrance, blooms, color)
- Supports wildlife



Photo: Roberto Rosales

File Home Insert Page Layout Formulas Data Review View Help Acrobat Tell me what you want to do

Clipboard Font Alignment Sensitivity Number Styles Cells Editing

Calibri 12 A A B I U Wrap Text Merge & Center General \$ % .00 .00 Conditional Formatting Format as Table Cell Styles Insert Delete Format Sum Filter Find & Select

C31 Honey mesquite

Rank	Tree Species	Common Name	Native Range	USDA Hardiness Zone	1.) Soil type tolerance	2.) Drought Tolerant (once established)	3.) Extreme Temp Tolerance (next 30 years)		4.) Extreme Temp Tolerance (2050-2099+)		TOTAL HEAT SCORE	TOTAL SCORE	9/10/2019 Meeting Notes
							a.) Heat	b.) Cold	a.) Heat	b.) Cold			
1	<i>Albizia julibrissin</i>	Persian Silk Tree/ Mimosa	not native to north america (USFS Fact Sheet)	6b-9b (USFS Fact Sheet)	1	1	1		1		4	6	Does well in parks and courtyards (very messy tree). No known data that it is non-invasive (self seeds in Las Cruces?)
2	<i>Cedrus atlantica</i>	Atlas Cedar	Atlas Mountains of Algeria and Morocco (Urban Forest Ecosystems Institute)	6-9 (Urban Forest Ecosystems Institute)	1	1	1		1		4	6	Never seen invasive nature
3	<i>Cedrus deodar</i>	Deodar Cedar	E Afghanistan, N Pakistan, North Central India (Urban Forest Ecosystems Institute)	7-9 (Urban Forest Ecosystems Institute)	1	1	1		1		4	6	Joran loves this tree. Not invasive.
4	<i>Cercis canadensis</i>	Eastern Redbud	north america (USFS Fact Sheet)	4b-9a (USFS Fact Sheet)	1	1	1		1		4	6	Not good for windy places. Would not plant in place of TX or OK redbud. Protected understory trees. Desert factor not good.



Photo: Roberto Rosales

Next Steps for ABQ

- Finalize the Climate Ready Trees Report
 - Site Location specific lists (municipal parks, street trees, commercial/business)
- Share lists with local partners (outside expert team)
- Outreach to municipal departments
- Launch Awareness Campaign in March 2020
- Continue to revisit criteria and let the process evolve as we learn new information