

# This presentation premiered at WaterSmart Innovations

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# AWE LANDSCAPE TRANSFORMATION...

## Improving Outdoor WUE Programs

AWE Outdoor Water Savings Research Initiative—Phase II

THOMAS W. CHESNUTT, PH.D., PSTAT<sup>®</sup>, CAP<sup>®</sup>

[tom@antechserv.com](mailto:tom@antechserv.com) 760.942.5149

Principal Investigator

A&N TECHNICAL SERVICES, INC.

839 Second Street, Suite 5, Encinitas CA 92024

# INTRODUCTION

- HISTORY—PHASE I – ANALYSIS OF PUBLISHED RESEARCH
- DIRECTION FOR PHASE II – SIX QUESTIONS FROM PHASE I
  1. WHAT MOTIVATES PEOPLE TO CHANGE THEIR LANDSCAPE AND IRRIGATION PRACTICES TO REDUCE THE OVERALL WATER REQUIREMENT AND USAGE?
  2. WHAT ARE THE REASONS AND RATIONALE FOR THEIR LANDSCAPE CHOICES?
  3. WHAT BARRIERS EXIST TO LANDSCAPE TRANSFORMATION AND TO UTILITY SPONSORED PROGRAMS?
  4. WHAT RANGE OF WATER SAVINGS (GALLONS REDUCED ANNUALLY PER IMPACTED CUSTOMER AND PER SF OF LANDSCAPE) CAN BE EXPECTED FROM REDUCING LANDSCAPE WATER REQUIREMENTS?
  5. WHAT FACTORS INFLUENCE THE VOLUME OF WATER SAVINGS ACHIEVED FROM REDUCING IRRIGATION REQUIREMENTS?
  6. HOW CAN WATER SAVINGS BE MAXIMIZED?

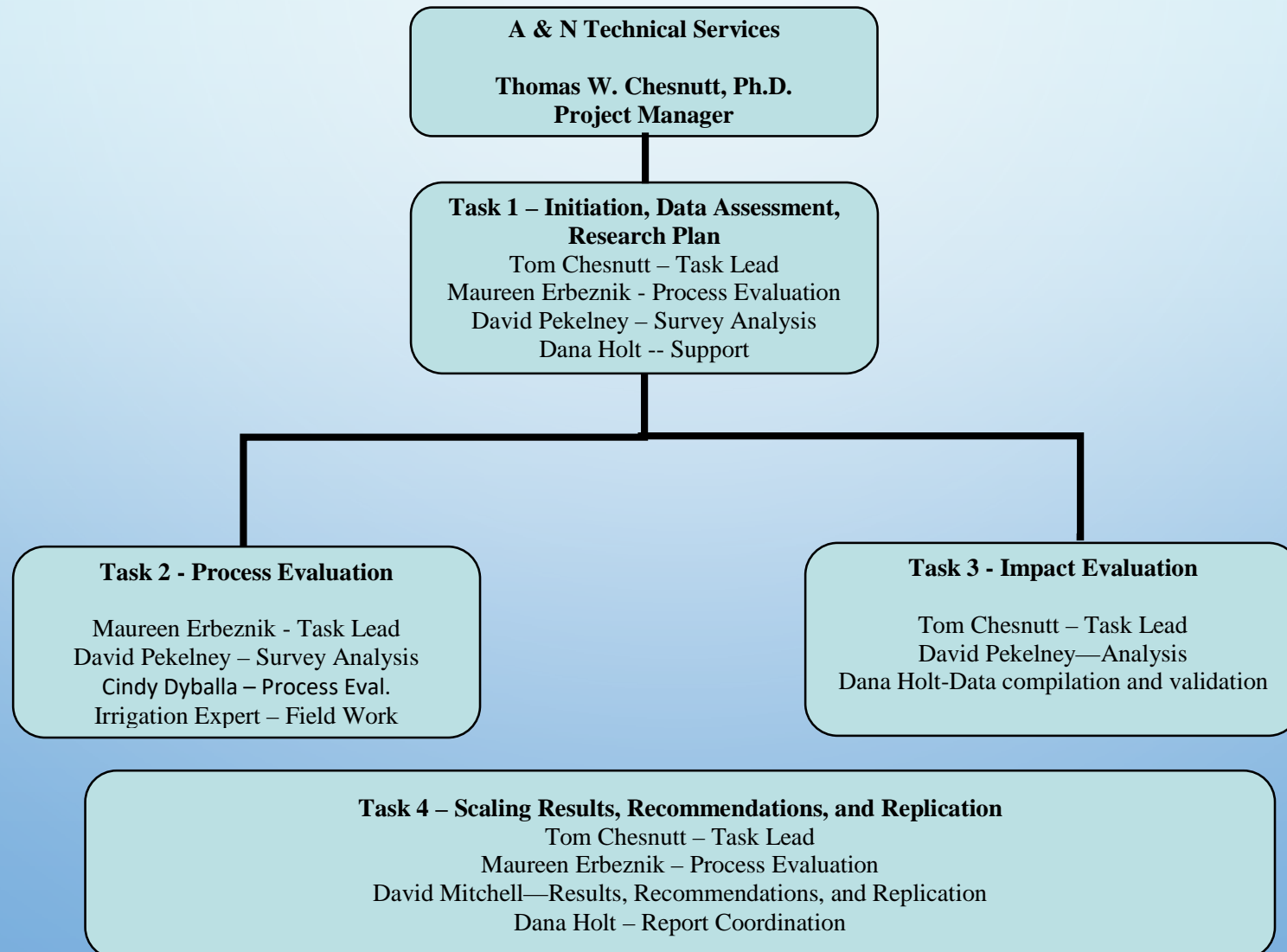


# SUSTAINABLE LANDSCAPING AND MARKET TRANSFORMATION

- MARKET TRANSFORMATION (MT)
  - OCCURS WHEN A NEW PRODUCT OR PRACTICE EMERGES,
  - IS FOUND TO BE SUPERIOR, AND
  - MAKES THE PRIOR PRODUCT/PRACTICE OBSOLETE.
- SUSTAINABLE LANDSCAPES
  - REQUIRE MULTIPLE APPROACHES TO TRANSFORM CONSUMER CHOICE FOR LANDSCAPING



# PROJECT ORGANIZATION: ROLE AND PROJECT FOCUS OF KEY PERSONNEL



# RESEARCH METHOD AND APPROACH

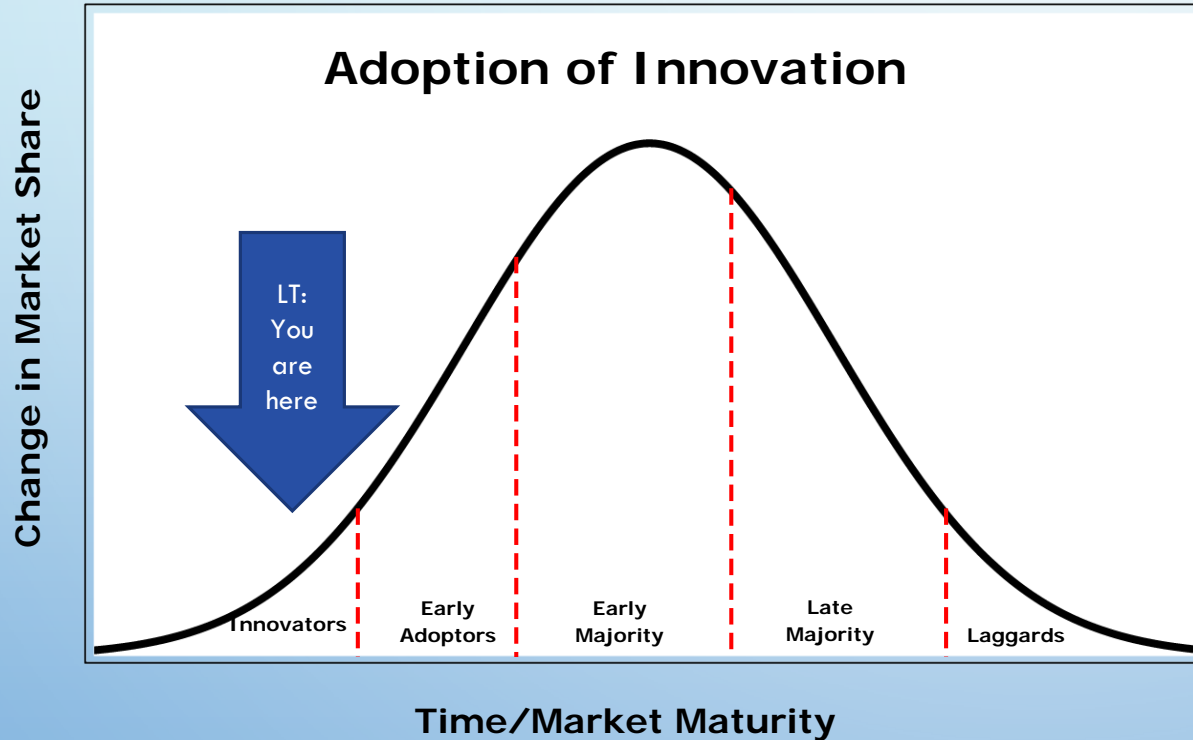
## OVERALL RESEARCH APPROACH

### METHODS

- PROCESS EVALUATION
  - PROGRAM DOCUMENTATION
  - INTERVIEWS
  - PROGRESS REPORTS
- IMPACT EVALUATION
  - WATER USE ANALYSIS
  - COST EFFECTIVENESS ANALYSIS
- TRANSFORMATION AND DOCUMENTATION

- WHAT MOTIVATES PEOPLE TO CHANGE THEIR LANDSCAPE AND IRRIGATION PRACTICES TO REDUCE THE OVERALL WATER REQUIREMENT AND USAGE?
- WHAT ARE THE REASONS AND RATIONALE FOR THEIR LANDSCAPE CHOICES?
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# LANDSCAPE AND MARKET TRANSFORMATION

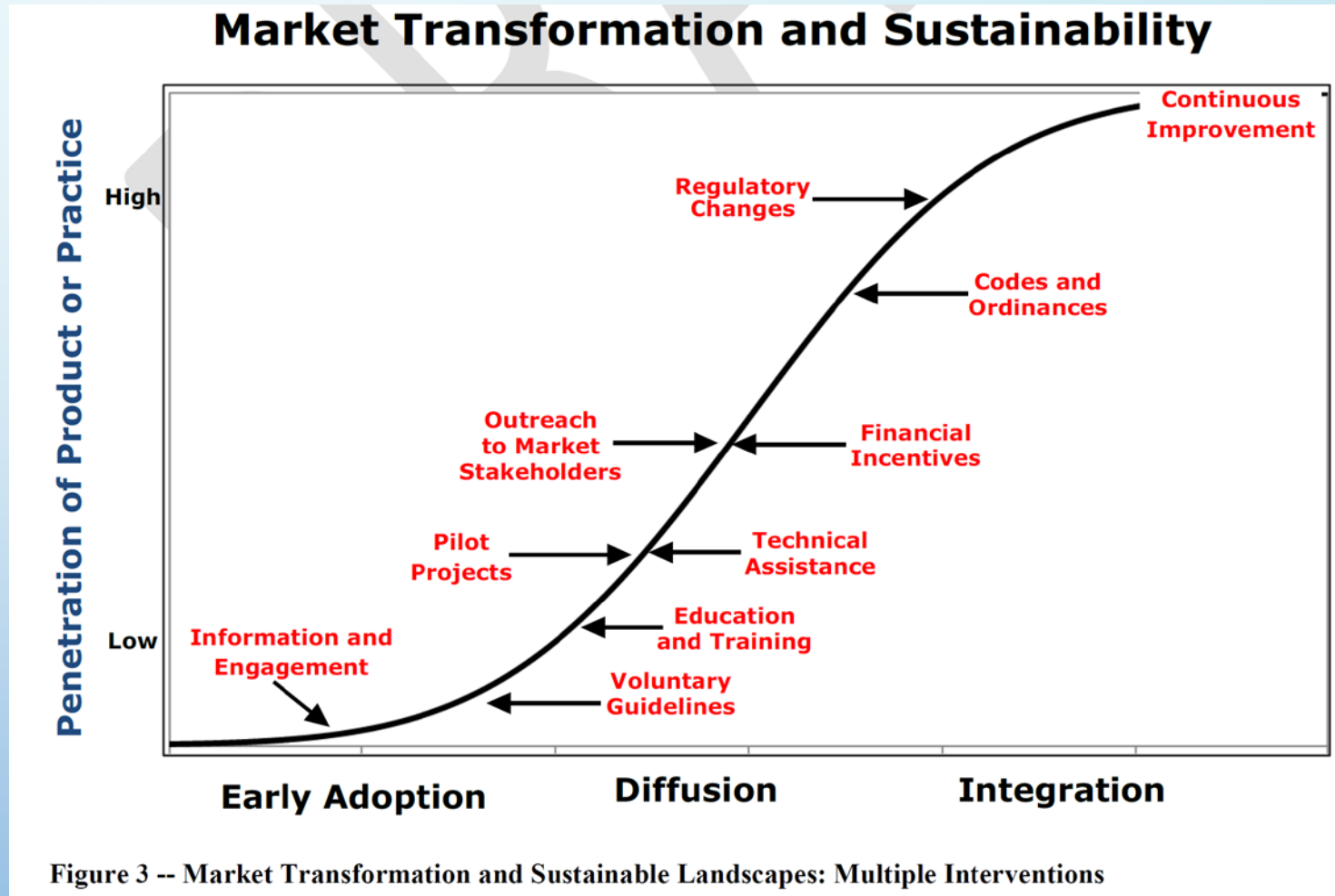


MT CHARACTERIZES CUSTOMERS BY HOW THEY RESPOND TO MARKET OFFERS:

- INNOVATORS: ADVENTUROUS PERSONS
- EARLY ADOPTERS: EDUCATED LEADERS
- EARLY MAJORITY: DELIBERATE DECISION MAKERS
- LATE MAJORITY: CAUTIOUS AND SKEPTICAL INDIVIDUALS
- LAGGARDS: RISK AVERSE PERSONS

# DETAILED PROJECT PLAN

- TASK 1
  - PROJECT INITIATION
- TASK 2
  - PROCESS EVALUATION
- TASK 3
  - IMPACT EVALUATION
- TASK 4
  - REPLICATION, SCALING
  - MARKET TRANSFORMATION
  - DOCUMENTATION

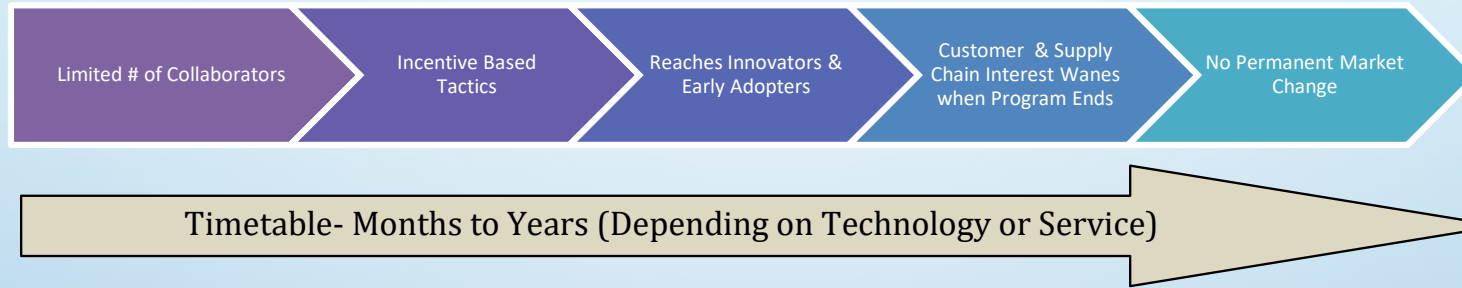


Source: Authors Construct

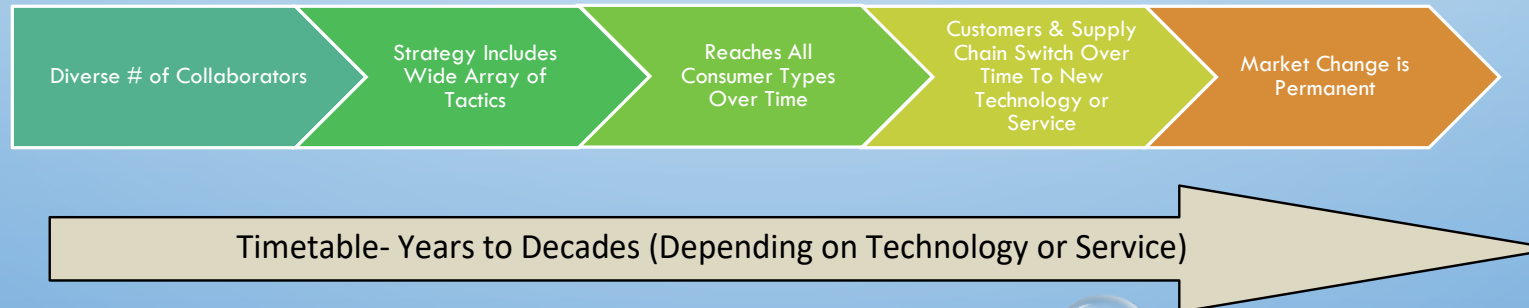


# MARKET TRANSFORMATION VS MARKET ACCELERATION

## Market Acceleration



## Market Transformation



# FINANCING SUSTAINABLE WATER: WATER RATES AS A TRANSFORMATIVE DRIVER

- **BUILDING BETTER RATES IN AN UNCERTAIN WORLD: A HANDBOOK TO EXPLAIN KEY CONCEPTS, PROVIDE CASE STUDIES AND IMPLEMENTATION ADVICE**
- **AWE SALES FORECASTING AND RATE MODEL: A USER-FRIENDLY PROBABILITY MANAGEMENT TOOL TO MODEL SCENARIOS, SOLVE FOR THE FLAW OF AVERAGES, AND CONFRONT UNCERTAINTY IN RATE MAKING**
- **FINANCINGSUSTAINABLEWATER.ORG: WEB-BASED RESOURCES TO CONVENE THE LATEST RESEARCH AND INFORMATION IN ONE LOCATION**

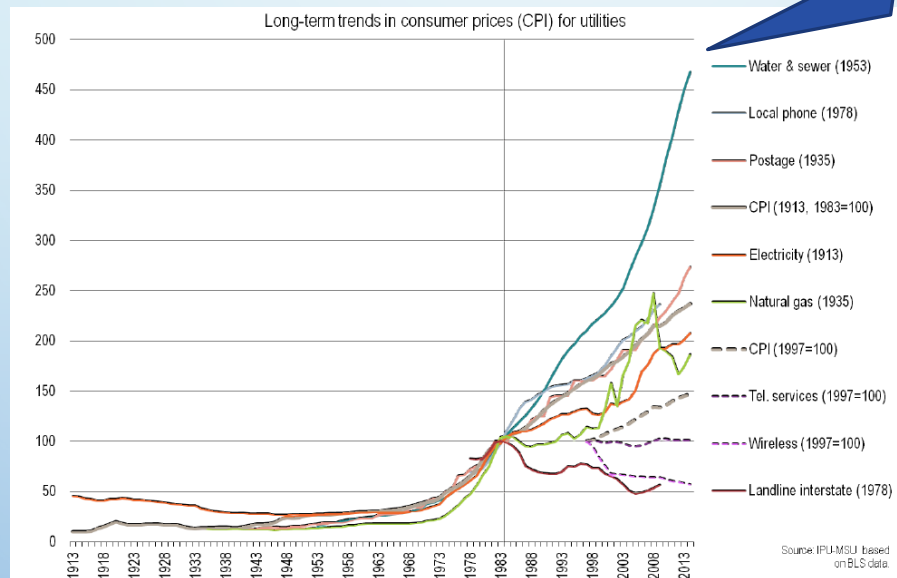
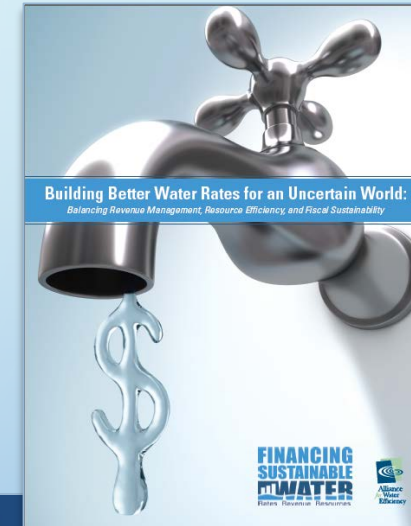


Exhibit 1. Long-term trends in the Consumer Price Index (CPI) for utilities (1913-2014). The index is set to 100 for 1982-1984 except for telephone and wireless services, where the index is set to 100 for 1997. Year (\*) indicates start of series.



**Alliance for Water Efficiency**  
Sales Forecasting and Rate Model  
Version 1.0

**Overview**  
Typical water rate models assume that future sales are known with certainty, and do not respond to price, weather, the economy, or supply shortages—that is to say, not the world we live in.

The AWE Sales Forecasting and Rate Model addresses this deficiency:  
Customer Consumption Variability—weather, drought/shortage, or external shock  
Demand Response—Predicting future block sales (volume and revenue) with empirical price elasticities  
Drought Pricing—Contingency planning for revenue resiliency  
Probability Management—Risk theoretic simulation of revenue risks  
Fiscal Sustainability—Sales forecasting over a 5 Year Time Horizon

**Model Modules**  
The model is divided into two modules: the Rate Design Module and the Revenue Simulation Module. With the Rate Design Module you can harness your historical billing data to evaluate the performance of your current volumetric rates or proposed new volumetric rates. This module can help you answer questions such as: What effect would increasing the rate in our top tier by 12% have on water demand? Will shifting to seasonal rates cause overall water use to increase or decrease? What block rate design could allow us to preserve our current level of revenue while reducing overall demand? How should we adjust our rates to support our water demand management objectives during water shortages? What proportion of customer bills will increase (or decrease) under our proposed rates when compared to our current rates? Answers to these questions are important to us like: What is the likelihood we will meet our one-year, three-year, five-year revenue targets under our current or proposed rates? What is the chance our revenues will miss? What level of confidence can we have that our sales will exceed our minimum planning estimates? These questions all concern prediction when future states of the existing key uncertainties are weather, growth of accounts, and possible need for water use curtailment in response to drought or other causes of supply shortfall. The user sales revenue planning questions addressing risk and uncertainty. It uses historical weather data for your service area along with information you provide the model to simulate your water demands and sales revenues over a five-year planning period for a wide range of possible future weather, growth, and shortage. You can assess how well or poorly your current or proposed rates are likely to perform over a five-year period given uncertain weather, growth, and adequacy of supply.

bill tabulations for each of your customer classes. A bill tabulation shows the number of customer bills at various levels of water usage during a specified period of time of your utility. To use the Revenue Simulation Module, in addition to the bill tabulation data, you need at minimum 15 years of historical monthly precipitation and at least 15 years of data is preferable. The model can accept up to 90 years of data if it is available.

ations to run. Therefore, you must enable Macros in Excel or the model will not work correctly.

www.numberofbills, numberofcustomers, and bill tabulations

Steps: Step 1 Model Setup | Rate Design Module | Step 2 Enter Bill Tabulations | Step 3 Customer Service Charges

**Financial Instruments to Manage Revenue Risk**  
A new white paper explores opportunities for utilities to use financial instruments—such as derivatives, insurance and bonds—to manage weather-related revenue risk in an increasingly volatile climate.

**RATES HANDBOOK**  
A new white paper explores opportunities for utilities to use financial instruments—such as derivatives, insurance and bonds—to manage weather-related revenue risk in an increasingly volatile climate.

**RATE MODEL**  
A user-friendly probability management tool to model scenarios, solve for the flaw of averages, and confront uncertainty in rate making.

**RECENT NEWS**  
• Water as a Commodity

# RESEARCH PLAN

## PRIMARY RESEARCH

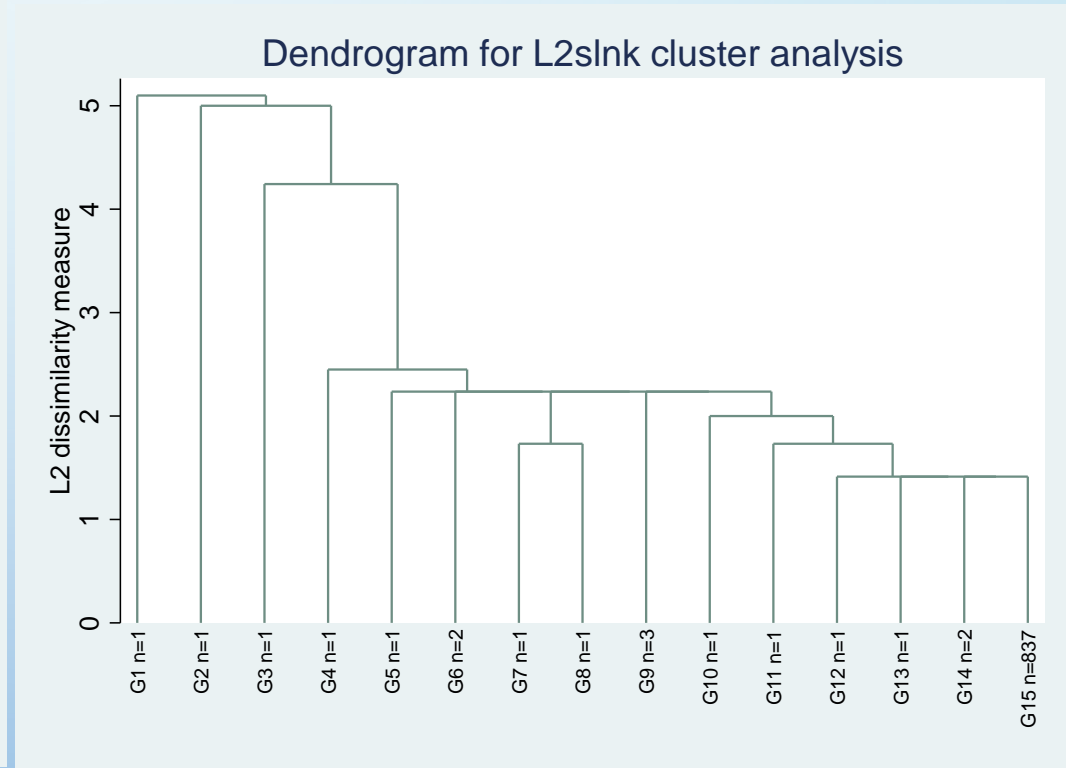
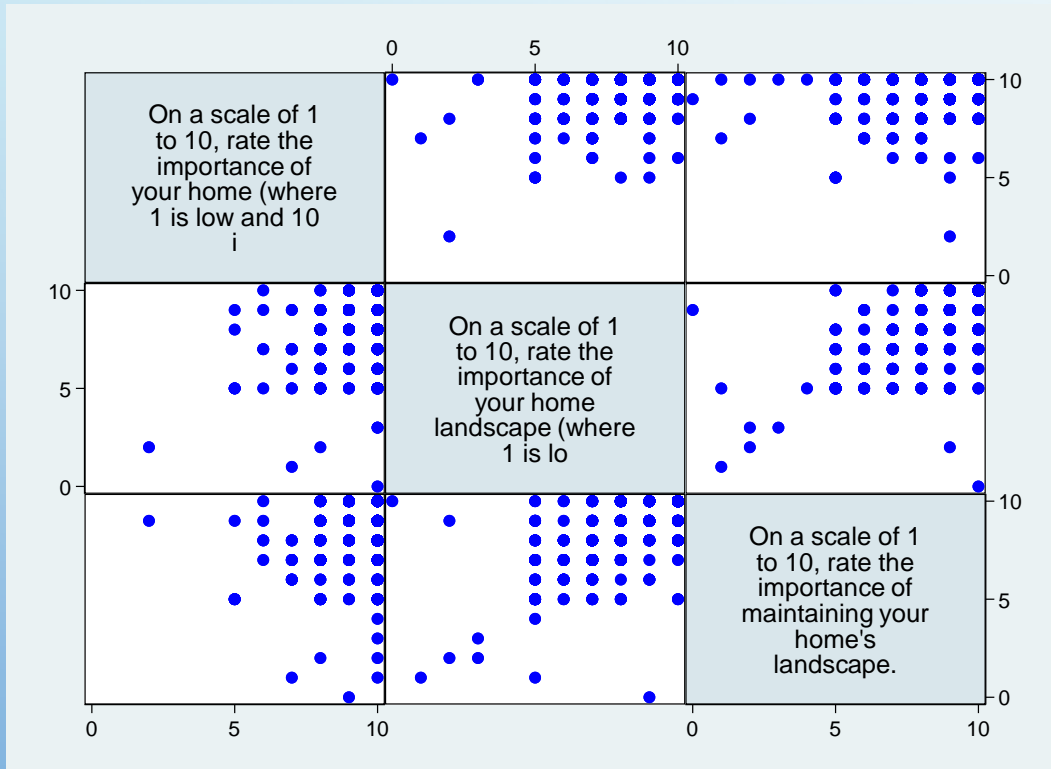
- PROCESS EVALUATION
  - EXISTING PROGRAM THEORY
  - PROGRAM DESIGN FOR LANDSCAPE TRANSFORMATION
  - IMPLEMENTOR PANEL AT WSI?
- CUSTOMER SURVEY
  - FOCUSED ON SF
  - CORE ITEMS WITH A SMALL SET OF UTILITY SPECIFIC ITEMS
  - EMAIL WITH UTILITY DISTRIBUTION PREFERRED
- WATER USE ANALYSIS
  - REPRODUCIBLE RESEARCH
  - MEASURED DELTA CHANGE
  - SPILLOVER EFFECTS
  - INCENTIVE DESIGN

## SECONDARY RESEARCH – NOT REINVENTING

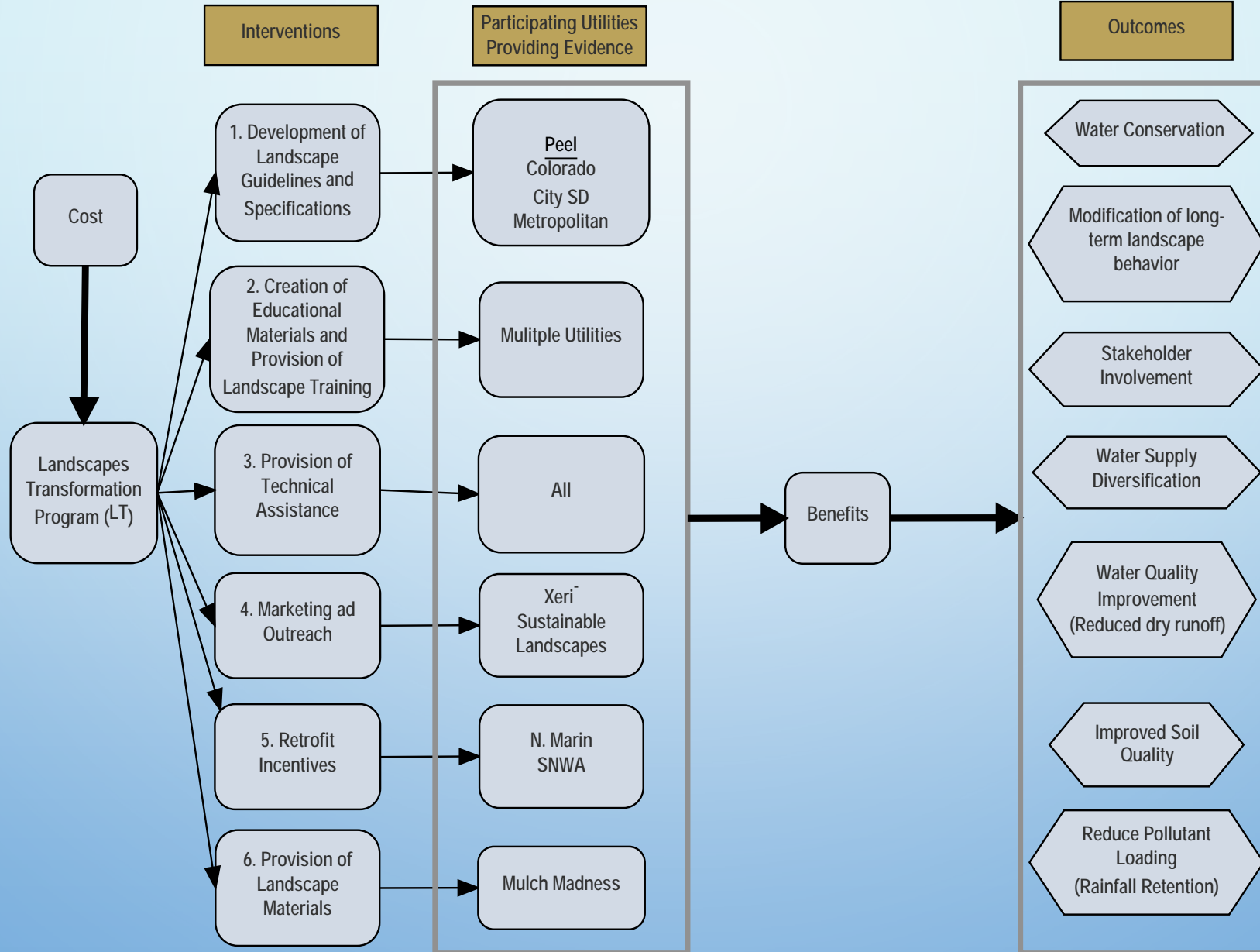
- SUMMARY OF EXISTING FINDINGS
  - MARKET RESEARCH
    - REASONS AND RATIONALES
    - MOTIVATIONS FOR LANDSCAPE CHANGE
  - WATER USE ANALYSIS
- TRANSFORMATION
  - BARRIERS TO ADOPTION
  - MAXIMIZING SAVINGS
  - MAXIMIZING TRANSFORMATION
- IMPLICATIONS FOR PROGRAM DESIGN AND REDESIGN

# ON LINE CUSTOMER LANDSCAPE SURVEY

Market Segmentation Analysis: ...the sorting hat for customers



# Landscape Transformation (LT) Programs: Market Interventions, Participating Utilities, Outcomes



# AWE LANDSCAPE TRANSFORMATION...

## Improving Outdoor WUE Programs

Draft report in early 2018

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