Chicago Metropolitan Agency for Planning

Large Landscape Conservation Programs and Incentives

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Presentation Content

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Large Landscape Programs: Definitions

- Target outdoor use
- Large: land parcel >2-3 acres with significant landscaping
- Sometimes metered separately from non-landscape water consumption

Residential Connection

- Smaller scale
- Considerable consumption: 30% of residential water demand is devoted to outdoor uses, mainly lawn irrigation
- Some conservation measures are shared, e.g. xeriscape & natural landscaping, improved irrigation technologies
- Other residential-oriented conservation measures include rain barrels, rain gardens, BRAC systems

Benefits of Landscaped Areas

- Support functional, social, aesthetic & economic interests for society
- Erosion control & stormwater management
- Temperature modification & greenhouse gas reduction
- Creation of recreational areas e.g. playing fields, parks, golf courses, etc.
- Expand economic value of residential and commercial real estate

Landscape Water Use

- USGS estimated that lawn irrigation takes 7.8 billion gallons of water per day (1998)
- Irrigated turf for recreational areas demand 2.7 billion gallons/day, 2x amount consumed by NY City
- Water supply systems report 1.5-3 times higher demand during summer than during winter
- Use varies according to climate, amount of rainfall, size of landscaped area, evapo-transpiration (ET), price of water and prevailing landscape aesthetic

Sources of Landscape Water Waste

- Poor irrigation scheduling
- Inefficient irrigation systems and practices
- Fixed notions about what constitutes attractive & functional landscapes
  - 60 million persons regularly spend time in lawn care
  - $750 spent annually to seed grass
  - $25 billion spent on mowers, hoses, clippers, etc.
  - 600 million gallons of gasoline used annually for lawn mowing eqp

Effects of Landscape Water Waste

- Increases water costs
- Depletes water supply sources & other natural systems
- Adds to pollution from lawn & other landscape chemicals
- Requires considerable time, labor & energy for maintenance

Conservation Measures for Large Landscapes

- **Landscape Audits**
- Surcharge on outdoor irrigation through separate metering (increasing block rates, seasonal charges, etc.)
- **Conservation-oriented landscaping**
  - **Xeriscape**
  - **Natural Landscaping**
- Ordinances restricting water waste
- **Improvements in irrigation technology**
- **Local community examples**
- Reuse municipal wastewater for irrigation
- **Site-specific Water Budget**

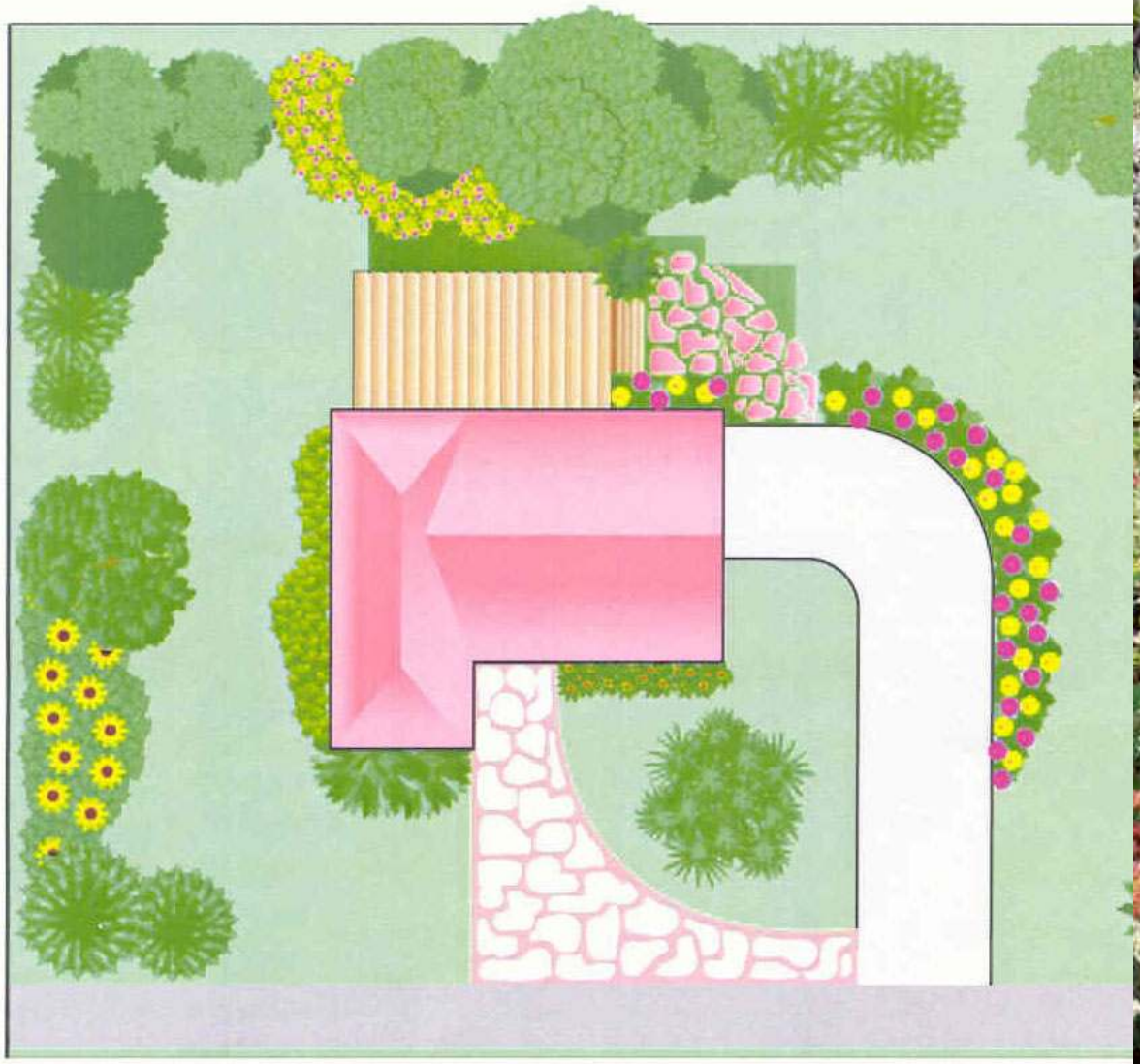
Landscape Audits

- Inventory existing operations & processes
- Identify areas of waste, e.g. excessive irrigation, inefficient equipment, etc.
- Propose adjustments, upgrades & technical assistance
- Prepare implementation schedules and follow up

Conservation-Oriented Planting I

- Xeriscape (dry-scape):
  - Principles: proper planning & design, soil analysis, appropriate plant selection, practical turf areas, efficient irrigation, use of mulch, appropriate maintenance
  - Implementing xeriscape principles can achieve minimum 50% reduction in water use compared with conventional landscaping practices
  - Xeriscape principles were incorporated in various ordinances and conservation programs

Example of a Completed Xeriscape Landscape Des



Conservation-Oriented Planting II

- Natural Landscaping:
  - Uses native plants that require minimal irrigation other than rainwater
  - Preserves & reintroduces indigenous plants
  - Seeks a harmonious relationship with nature
  - Increasingly occurring in community properties, golf courses, roadway, corporate landscapes, etc.
  - In IL it is a conversion to native prairie vegetation
  - Native prairie grasses help control erosion and reduce runoff by 50% compared with conventional lawns

Olympia Fields Country Club
Olympia Fields, Illinois

AT&T Corporate Campuses
Network Software Division
Lisle, Illinois

IDOT wildflower plantings in the right-of-way

Wheaton-Warrenville South High School Wheaton, Illinois

Planting of native vegetation in a Commonwealth Edison right-of-way

Prairie Stone Business Park, Hoffman Estates

Improvements in Irrigation Technology

- Use systems based on evapo-transpiration (ET) data:
  - ET is the amount of water lost from plant foliage & soil over a period of time, expressed as depth of water lost per day
  - ET is obtained from remote weather stations
  - Helps to schedule irrigation & improve water efficiency by assessing water needs for plants
  - ET is affected by temperature, sun, humidity, wind speed & direction, etc.

ET Weather Data

Source: Dickenson, 2008

Local Community Examples

- Local Governments, businesses, managers of public properties can demonstrate landscape conversion into more water-efficient yet lush & attractive areas

Gompers Park
Chicago, Illinois

Site-specific Water Budget

- Utilities set budgets to set guidelines for customers' outdoor water use
- Purpose of water budgets is to set peak-demand rates & charges
- Water budgets are determined by size, water requirements, irrigation system efficiency & effective precipitation

Case Studies I

- Irvine Ranch Water District, CA used increasing block rates to achieve 50% reduction in outdoor watering.
- Albuquerque, NM launched conservation program in 1995. Before program outdoor demand accounted for 50% of use, in 2001 it comprised 40%. Reductions achieved thru ordinances, $250 rebate for turf reduction & native planting
- Four southern CA commercial sites achieved 1,550-4,600 gallons/day/acre and $1,500-4,500/year/acre after switching from conventional irrigation to ET data based forecasting

Case Studies II

- A study by Applied Ecological Services (Brodhead, WI) estimates the 20 yr cost of maintaining native prairie landscape is $3,000/acre vs. $20,000/acre for non-native turf. Prairie planting avoids watering costs, fertilizer, topsoil & mowing.
- A FL nursery reduced it groundwater pumping for irrigation by 75% (150,000 gpd) thru runoff & recovery system that reused rain & irrigation water.
- Regionally: Orland Park instituted Outdoor Water Usage Regulations scheduling lawn-watering and instituting rain shut-off switches for irrigation systems.

Recommendations

- Establish ordinances that reduce landscape water waste & require efficient irrigation systems
- Require submission of landscape plans with conservation-oriented landscaping for new or modified developments
- Promote turf reduction thru rebate programs
- Provide local community examples for conservation-oriented landscaping
- Offer technical assistance to upgrade landscape water use efficiency
- Recommend or mandate watering schedules- duration, frequency, time of day, etc.

Questions/Comments?

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