# Carbon Offsets and the Urban Forest Conference

**June 6, 2012**

## The Tree Carbon Calculator

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## Topics

- Background
- Core TCC Components
- Core EcoLayers Components
- TCC – EcoLayers Integration
- Key Features
- Deployment Scenarios
- Future Plans

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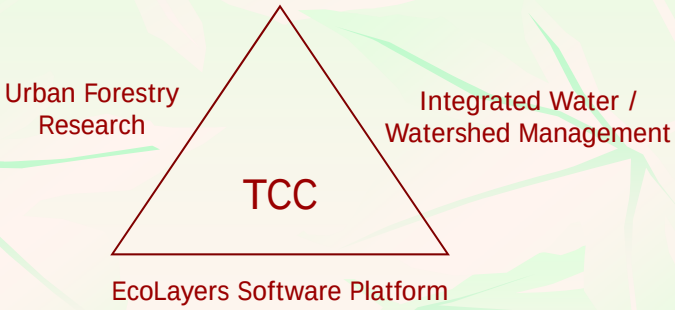
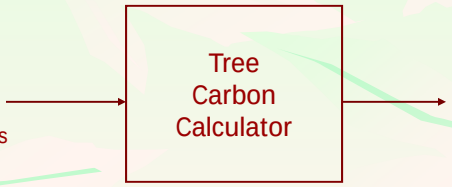
## Background

Convergence:
Innovative Science, Technology, and Business Models




## Core TCC Components

- Tree Inventory
- Technical data
- Planting & Mortality Schedules
- Equipment & Vehicles Schedules
- Growth equations




- CO2 Stored
- CO2 Sequestered
- Biomass
- Emissions

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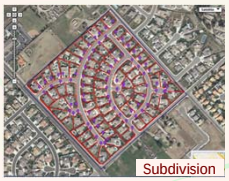
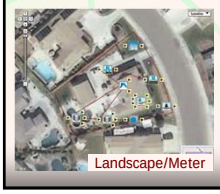
### Integrated Water/Watershed Management – Key Ideas

- "My" stake is part of a larger system
- Complex, changing inter-relationships:
  - Water <–> Land <-> Carbon
  - Geographic: Parcel → Region
- Managing "silos" is limiting
- Integration: People, data, functions, processes

**Regional**




**Department or Organization Level**




**EcoLayers Offerings**

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## Core EcoLayers Platform

Public

Enterprise Users & Admin

Enterprise Partners

**User Interface (Permissions-based)**

Special Functions

Statistics (R)

Asset Management

Models & Analytics

Workflows

Transactions

**Core Platform (Deployment-ready)**

Personalization | Data & Spatial Queries | Reports & Charts

User & Data | Export / Import | Map-boarding

In-house or Third-party Database or GIS Servers

Keypad | Spatial | CAD | Excel | Docs | Photos | SCADA

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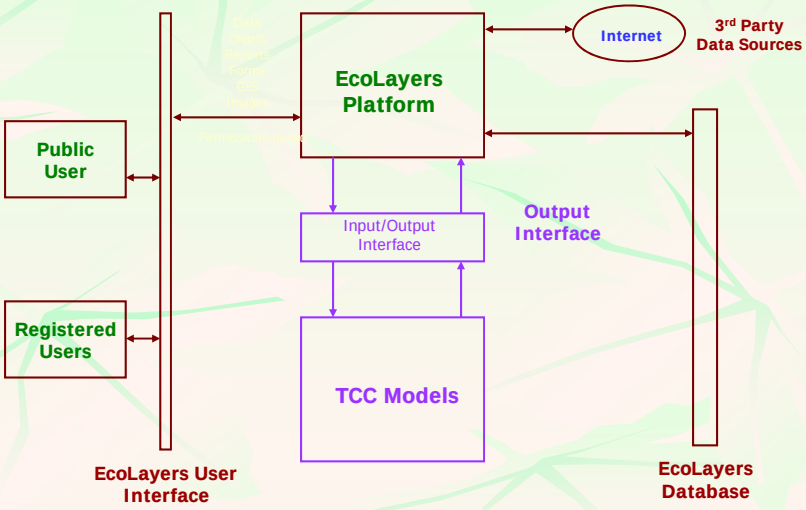
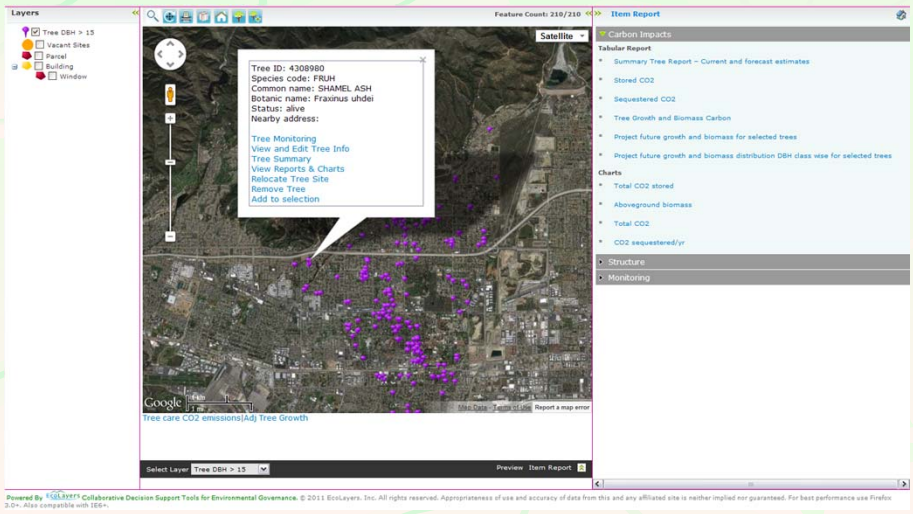
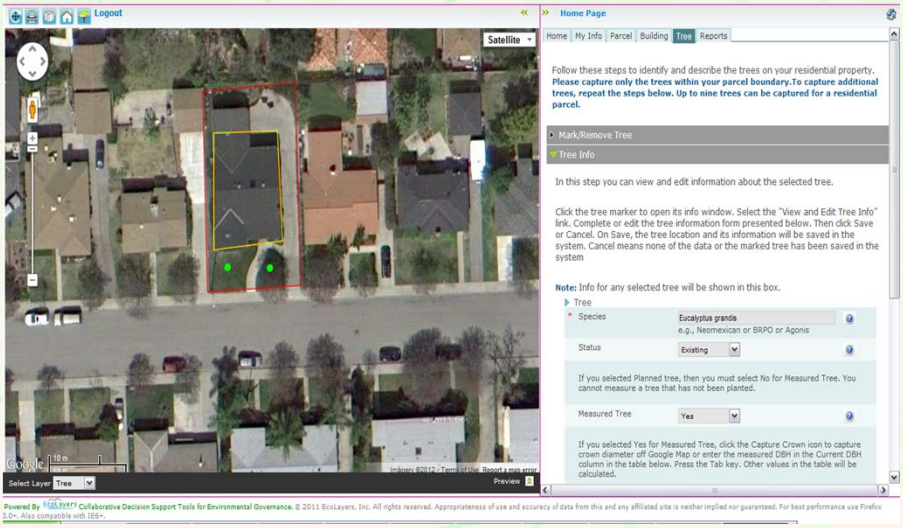
## TCC – EcoLayers Integration




## Enterprise Customer
### Map Interface



## Enterprise Customer
### Public Portal

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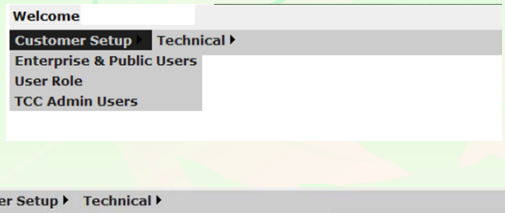
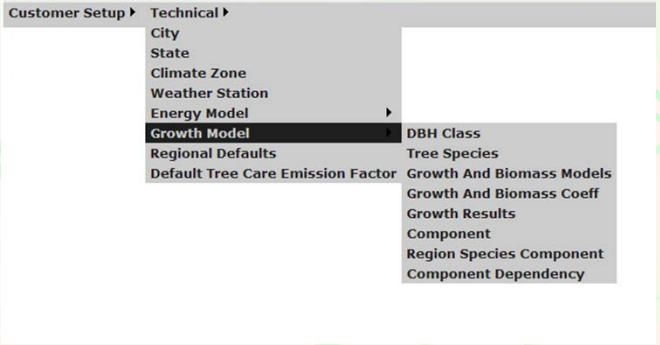
## TCC Admin Screen

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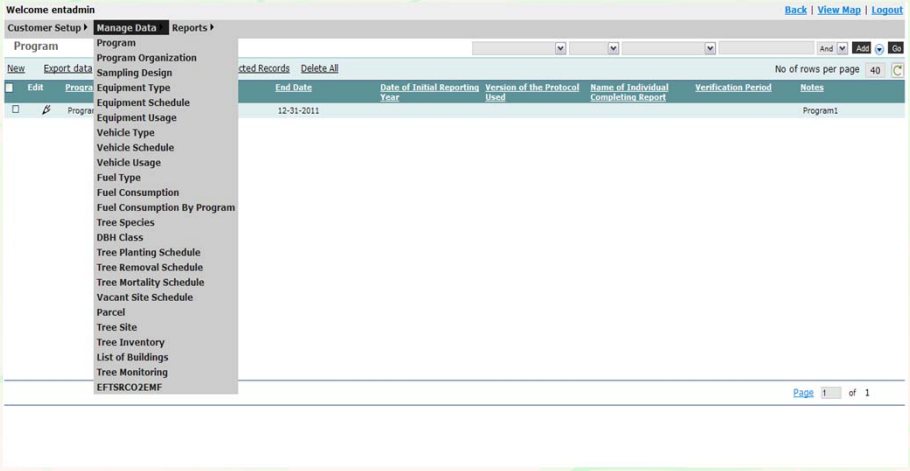
# Enterprise Portal
## Admin Interface

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# Key Features - Examples

**Adminstration**
- TCC admin – Technical/Model Data
- Enterprise / Departmental admin
- View, Edit, Delete permissions
- Feature access permissions
- Enterprise & Divisional program mgmt

**Tree program inventory and management**
- Tree sites and inventory import
- Localization (climate, weather)
- Matching species to TCC standard list
- Planting, Removal, Mortality schedules
- Tree sites management
- Track monitoring program
- Admin console for individual or bulk edits

**Outputs**
- Comprehensive Protocol & program mgmt reprts
- Export reports and program data
- Fuel/power consumption by program

**Spatial**
- User-friendly integrated GIS capabilities (no separate license required)
- Support for Google Fusion tables
- Program assessment, monitoring, ans ite management tools
- Database and spatial queries

**Tree Care**
- Equipment schedule & usage
- Vehicle schedule & usage
- Fuel/power consumption by program

**Integrated Public Portal**
- Residential landscape scale
- Capture parcel, building, trees
- Carbon and energy impacts of selected trees

**Other**
- SaaS architecture
- Extendable to integrate other UF applications
- Carbon and energy impacts of selected trees

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## Reporting – Examples

**Support for comprehensive reporting:**

- Multiple simulation and querying criteria, e.g., program, street, species, DBH class, age, years
- Database and spatial queries

**General Information**
- Offset Project Operator
- Offset Project Name
- Project location
- Project start date
- Date of initial reporting year
- Version of the protocol used
- Name of individual completing report
- Date
- Verification period
- Project personnel names

**Tree Info**
- Current, hostoric, projected
- Stats: Species, age, DBH, ht, crown
- Monitoring history

**Monitoring**
- Tree Management
- Tree Monitoring

**Structure**
- Site Information
- Tree Information
- Tree Population (live, dead) by DBH class
- No of trees distribution DBH Class wise
- Project future growth & mortality
- Project future growth & numbers by DBH class

**Carbon Impacts**
- Stored CO2
- Sequestered CO2
- Tree Growth and Biomass Carbon
- Project future growth and biomass
- Project future growth and biomass by DBH class

**Emissions for Tree Care**
- Vehicle fuel/energy and CO2
- Equipment fuel/energy and CO2
- Total

**Energy Impacts:** Heating, Cooling, Total

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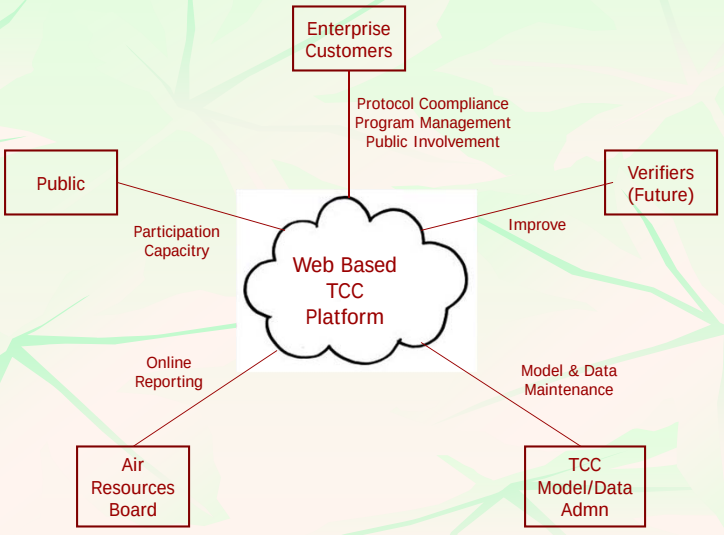
## TCC Platfrom
## Deployment Scenarios

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## Future Plans
### ecoSmart Landscapes

- Residential scale
- Water Impacts:
  - Conservation and Runoff
  - Partnering with a water district
- Fire

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