

North Central Texas  
Council of Governments

North Central Texas Energy Forum

October 26, 2016

# *ENERGY ON CAMPUS:* EDUCATION & WORKFORCE TRAINING FOR ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT

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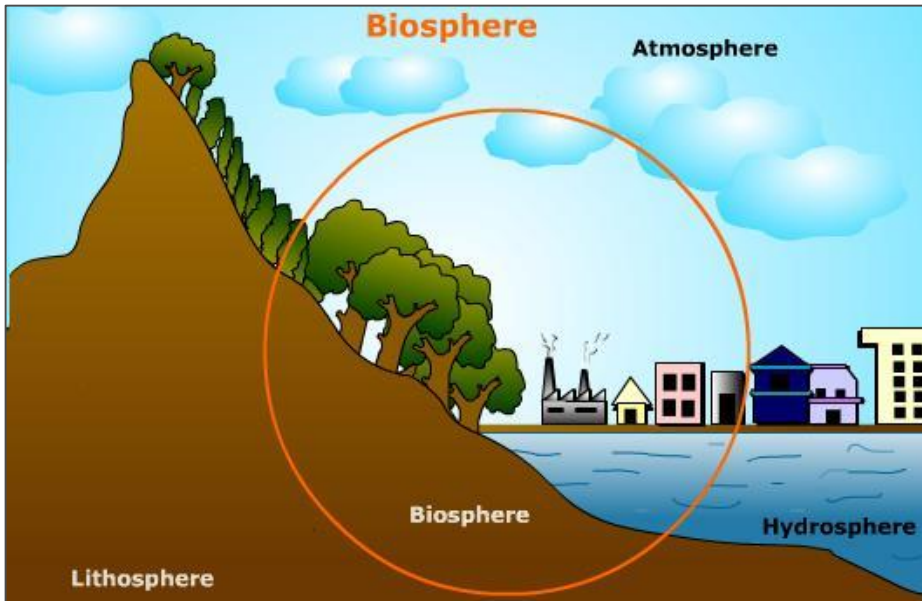


**North Lake College**

DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

[www.northlakecollege.edu/green](http://www.northlakecollege.edu/green)





Biology is the “Study of Life,” the Biosphere



[www.sustainabilityma.org](http://www.sustainabilityma.org) SMA in 20 US states, 8 countries.

**Save the Date!**

**TRACS**

TEXAS REGIONAL ALLIANCE  
for CAMPUS SUSTAINABILITY

**5th Annual TRACS Summit**  
**March 5-7, 2017**  
**at Texas A&M Commerce**

Texas (and Mexico!) Higher Education Collaboration

# PRESENTATION OUTLINE



- I. WHAT IS ENVIRONMENTAL OR SUSTAINABILITY MANAGEMENT?
- II. GLOBAL TRENDS IN ENERGY & BUILDING CERTIFICATION
- III. TEXAS HIGHER EDUCATION – ENERGY BUDGET AND USAGE
- IV. DCCCD – SUSTAINABILITY MANAGEMENT, EDUCATION & WORKFORCE
- V. NORTH LAKE COLLEGE (DCCCD) – CAMPUS PROJECTS & MASTER PLAN

# WHAT IS ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT?



- ENVIRONMENT
  - PEOPLE, PLANTS, ANIMALS, NATURAL RESOURCES, AND HABITAT/GEOGRAPHIC CONDITIONS
- SUSTAINABILITY
  - CONSERVATION FOR FUTURE GENERATIONS
  - TRIPLE-BOTTOM-LINE = ECONOMY, ENVIRONMENT, SOCIETY
- MANAGEMENT
  - ONGOING PROCESS OF COMMUNICATION & STRATEGIC DECISION-MAKING FOR USE OF RESOURCES (“CONTROL”)
- TRIPLE-BOTTOM-LINE MANAGEMENT
  - PROFIT = CAPITAL RESOURCES
  - PEOPLE = HUMAN RESOURCES
  - PLANET = NATURAL RESOURCE

# GLOBAL TRENDS: ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT

## POLICY & BUILDING CERTIFICATIONS

- “ENERGY PERFORMANCE CERTIFICATION OF BUILDINGS” REPORT BY THE IEA
- EU ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (EPBD) -- [HTTP://WWW.EPBD-CA.EU/](http://www.epbd-ca.eu/)
- CITY OF AUSTIN GREEN BUILDER PROGRAM (RECOGNIZED IN 1991)
- BREEAM HAS CERTIFIED ~2,253,470 BUILDINGS IN 77 COUNTRIES ([HTTP://WWW.BREEAM.COM/](http://www.breeam.com/))
- USGBC HAS CERTIFIED ~458,700 BUILDINGS/HOMES IN 162 COUNTRIES ([HTTP://WWW.USGBC.ORG/ARTICLES/USGBC-STATISTICS](http://www.usgbc.org/articles/usgbc-statistics))

## EDUCATION & WORKFORCE TRAINING

- UNESCO TVET – TECHNICAL & VOCATIONAL EDUCATION & TRAINING (TVET)
- PARIS AGREEMENT – INVOLVES ENERGY RESEARCH COLLABORATION



# STRATEGIC ENERGY MANAGEMENT CHECKLIST

[https://ecenter.ee.doe.gov/EM/SPM/Pages/SEM\\_home.aspx](https://ecenter.ee.doe.gov/EM/SPM/Pages/SEM_home.aspx)



**SEP**  
Verified energy performance

**ISO 50001**

Standard Energy Management System (EnMS) framework for global industrial operations

**Foundation Energy Management**

(e.g., ENERGY STAR for Buildings & Plants)

Fundamental approach to developing a systematic energy management program based on industry best practices and benchmarking tools

- Receive SEP certification
- Obtain third-party verification
- Achieve energy performance improvement targets
- Conduct rigorous measurement & verification of energy performance

- Receive ISO 50001 certification
- Achieve ISO 50001 EnMS
- Management reviews
- Conduct internal EnMS audit
- Formally document EnMS

- Re-assess
- Evaluate progress
- Implement plan
- Create action plan
- Set goals
- Baseline energy performance
- Establish energy policy

# TEXAS HIGHER EDUCATION:

## ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT

- 2007 – **HB 3693** – ENERGY EFFICIENCY BILL, 5% ENERGY REDUCTION ANNUALLY FOR HIGHER EDUCATION AND SCHOOL DISTRICTS
- 2013 – **SB 700** – EPA ENERGY STAR PORTFOLIO MANAGER AS TOOL FOR STATE-WIDE REPORTING BY HIGHER EDUCATION
- 2016 – **SECO** ESTABLISHED ASHRAE 90.1-2013 MANDATORY FOR ALL PUBLIC BUILDINGS
- **AASHE, SECOND NATURE, & TRACS** – [WWW.TEXASCAMPUSSUSTAINABILITY.COM](http://WWW.TEXASCAMPUSSUSTAINABILITY.COM)

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ENERGY STAR®  
PortfolioManager®

# Texas Higher Education Energy Budgets

(SOURCES: SECO and Second Nature Reports 2013-2015)

17 schools = \$48.6 M spent on electricity

Austin College	2014	\$	1,830,520
Austin Community College District	2014	\$	3,094,224
Cedar Valley College - DCCCD	2013	\$	921,023
Houston Community College	2012	\$	9,995,572
Lamar University at Beaumont	2014	\$	2,286,424
McLennan Community College	2013	\$	2,005,000
North Lake College - DCCCD	2014	\$	785,226
Northwest Vista College	2015	\$	715,119
Prairie View A&M university	2014	\$	3,787,589
Stephen F. Austin State University	2014	\$	2,129,385
Texas A&M Health Science Center	2014	\$	4,189,181
Texas A&M University at Kingsville	2014	\$	1,724,140
Texas Agricultural Experiment Station	2014	\$	3,325,948
Texas State Technical College	2014	\$	3,522,011
Texas Tech University Health Sciences Center	2014	\$	3,306,727
University of Texas at Arlington	2014	\$	1,627,784
University of Texas Health Science Center at Houston	2014	\$	3,352,580



# Texas Higher Education Electricity Usage

(SOURCES: SECO and Second Nature Reports 2013-2015)

17 schools = 1,827,248,289 kWh or ~210 MW/YR

Institution	Report Year	Electricity Usage (kWh)
Austin College	2014	15,383,000
Austin Community College District	2014	39,168,070
Cedar Valley College - DCCCD	2013	7,970,153
Houston Community College	2012	77,499,075
Lamar University at Beaumont	2014	15,470,669
McLennan Community College	2013	8,293,528
North Lake College - DCCCD	2014	11,503,224
Sam Houston State University	2014	73,108,170
Texas A&M University at College Station	2014	249,111,100
University of Texas at Austin	2014	110,715,300
University of Texas at Dallas	2014	89,058,310
University of Texas at San Antonio	2014	91,628,380
university of Texas Health Science Center at Houston	2014	75,273,410
University of Texas Health Science Center at San Antonio	2014	124,705,300
University of Texas MD Andersn Cancer Center	2014	306,358,300
University of Texas Medical Branch Galveston	2014	211,175,600
University of Texas Southwestern Medical Center	2014	320,826,700



DCCCD:

## ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT

- DCCCD BEST PRACTICES IN SUSTAINABLE FACILITIES AND OPERATIONS, ESTABLISHED IN 2015
  - [HTTPS://WWW.DCCCD.EDU/AU/CHANCELLOR/ORGLEARN/COUNCILS/WG/DCCCDGREEN/PAGES/BPRACTICES.ASPX](https://www.dcccd.edu/au/chancellor/orglearn/councils/wg/dcccdgreen/pages/bpractices.aspx)
- DCCCD SUSTAINABILITY POLICY, DRAFT IN PROGRESS

### **SUSTAINABLE DCCCD STRATEGIC GOALS:**

- 1) THE CONSERVATION OF ENERGY AND RESOURCES
- 2) MINIMIZING WASTE
- 3) EDUCATING OTHERS ABOUT SUSTAINABILITY AND, FINALLY
- 4) ENGAGING THE LOCAL, REGIONAL AND NATIONAL COMMUNITY ON SUSTAINABILITY EFFORTS.

# DCCCD: EDUCATION & WORKFORCE



- **DCCCD SUSTAINABILITY EDUCATION TASK FORCE**
  - SUSTAINABILITY SCHOLARS PROGRAMS – 3 TO 5 COURSES + ANY ASSOCIATE DEGREE
  - NLC SAGE SCHOLARS – SUSTAINABILITY AWARENESS & GLOBAL EDUCATION
- **CEDAR VALLEY COLLEGE, LANCASTER/DALLAS** – COMMERCIAL/RESIDENTIAL BUILDING PERFORMANCE
- **NORTH LAKE COLLEGE, IRVING/COPPELL** -- COMMERCIAL/RESIDENTIAL CONSTRUCTION
- **EASTFIELD COLLEGE, MESQUITE** – AAS & CERTIFICATE IN RENEWABLE ENERGY TECHNOLOGY

 **North Lake College**  
DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

- ~28,000 STUDENTS (80% PART-TIME)
- ~1,200 EMPLOYEES (70% PART-TIME)
- AA, AS, AAS, CERTIFICATES
- ARTS (FINE, PERF., LIBERAL)
- BUSINESS & REAL ESTATE
- COMPUTER SCIENCE
- CONSTRUCTION
- FIELD STUDIES
- LOGISTICS MANAGEMENT
- SAGE SCHOLARS
- STEM



**Central Campus**  
5001 N MacArthur Blvd  
Irving, TX 75038



**North Campus**  
101 S Royal Lane  
Coppell, TX 75019



**South Campus**  
1081 W Shady Grove Rd  
Irving, TX 75060



**West Campus**  
1401 Royal Lane W  
DFW Airport, TX 75261



# NORTH LAKE COLLEGE (DCCCD):

## ENVIRONMENTAL & SUSTAINABILITY MANAGEMENT

- SUSTAINABILITY COMMITMENT AND 6 KPI'S
- 3 USGBC-LEED SILVER BUILDINGS
- EMS (SIEMENS)
- 2030 MASTER PLAN IN PROGRESS – ACADEMIC & INFRASTRUCTURE
  - RENEWABLE ENERGY PLAN
- \$7M PROJECTS SINCE 2011, AVERAGE ROI \$1.8/YEAR
  - LED LIGHTING RETROFITS
  - SOLAR EXTERIOR LIGHTING
  - COMPUTERIZED IRRIGATION CONTROLS



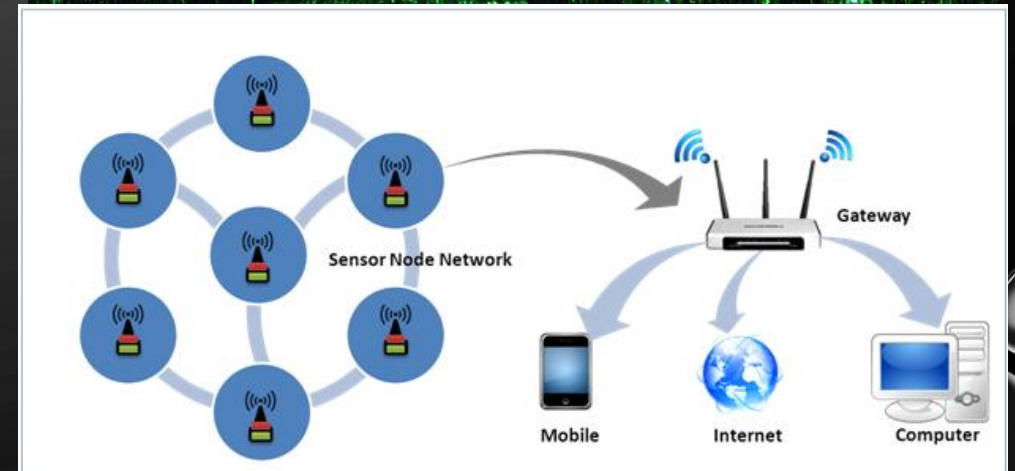
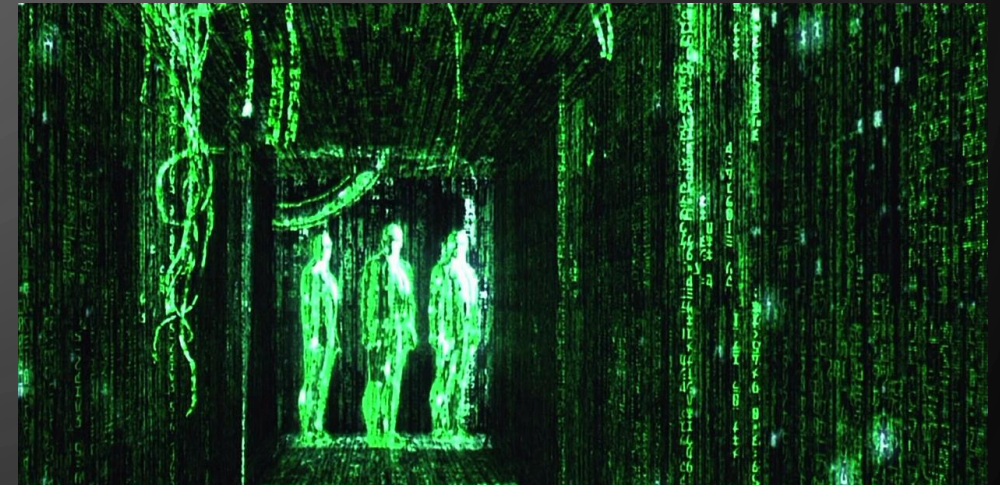


# NORTH LAKE COLLEGE IN TOP 20 “MATRIX PROJECT”



## AASHE – KIMBERLY CLARK SUSTAINABLE CAMPUS COMPETITION

- [WWW.AASHE.ORG](http://WWW.AASHE.ORG)
- ENVIRONMENTAL / SUSTAINABILITY DASHBOARD SOFTWARE (MORE COMPREHENSIVE THAN ENERGY DASHBOARD)
- DISPLAY SCREEN NETWORK
- AUTO SENSOR NETWORK
- LOCATIONAL MANUAL SENSOR LABS
- FACULTY STIPENDS
- STUDENT SCHOLARSHIPS



# OBERLIN ENVIRONMENTAL DASHBOARD

*empowering our community to conserve resources*

City-wide Dashboard

Building Dashboards

Community Voices

Resources Explained

Project Explained

**ELECTRICITY**

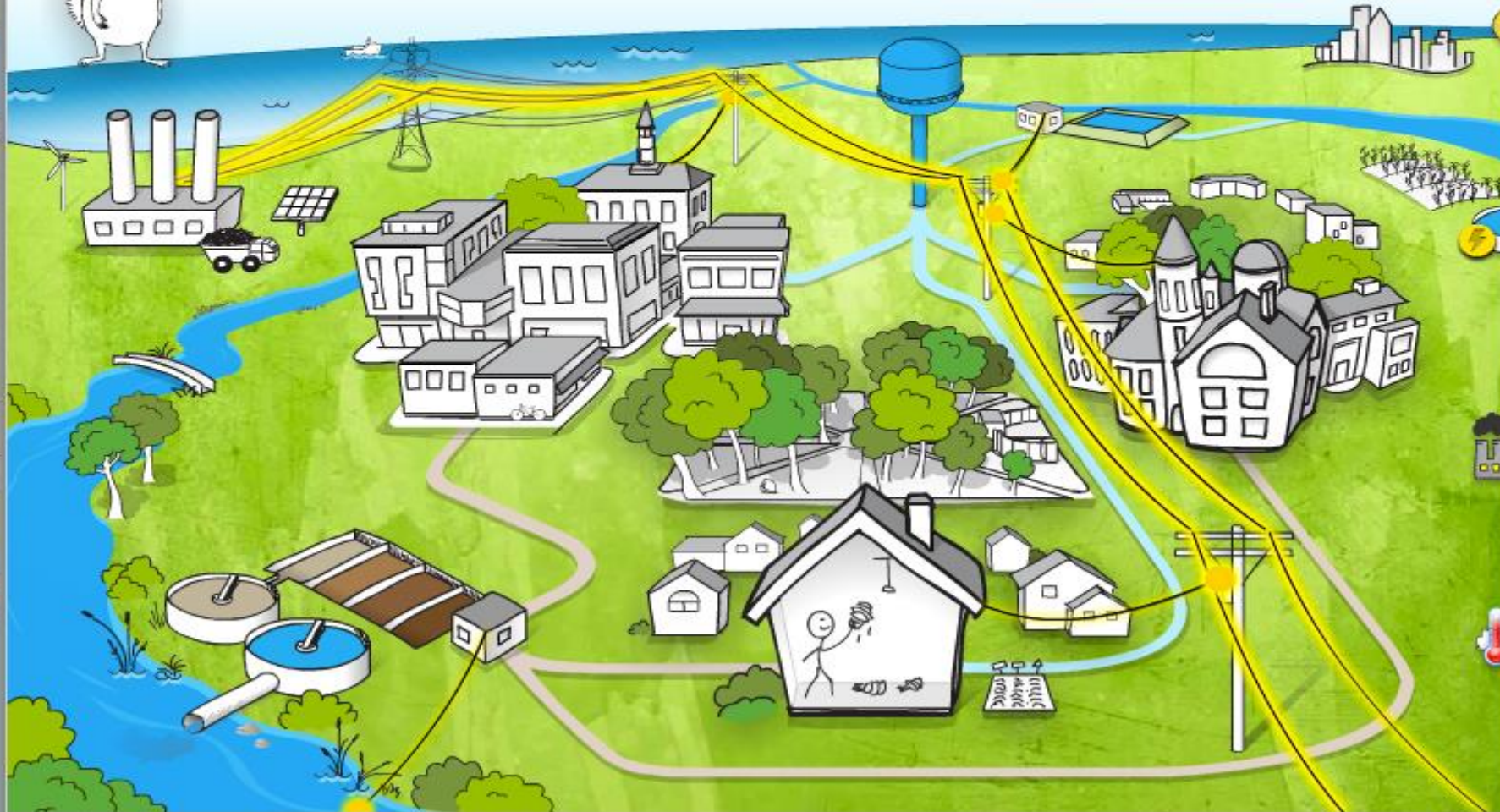
**WATER**

**WATERSHED**

**WEATHER**



This view of the dashboard shows community-wide electricity use



## Current

Total city electricity use

**1,806.8**

watts per person

LOW

HIGH

Electricity for water treatment

**24.4**

watts per person

LOW

HIGH

CO2 emissions from electricity

**2.6**

lbs CO2 per hour per person

LOW

HIGH

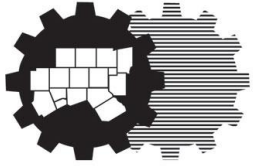
Air Temperature

**73.2**

degrees F

LOW

HIGH



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