2025 WORKFORCE PLANNING

AGENDA

- Topic Overview, Statistics and Trends—Steve Wanders

- Citizens Energy Group Talent Development Initiatives – Marc Jacob

- Cooperative Education at Purdue, (“Recruit Once, Hire TWICE”) – Steve Wanders
TOPIC OVERVIEW

2025 WORKFORCE PLANNING
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TOPIC OVERVIEW

• High demand for additional STEM graduates in ALL disciplines, however:
  • From 1990 to 2010, overall U.S. college graduation levels GREW 50%
  • During same period, number of U.S. engineering graduates fell flat at 120,000
    • India and China each produce nearly 1 Million engineers annually.

Clearly, there is a limited supply, but high demand for STEM professionals, especially for Biomedical and CIVIL Engineering graduates

- “According to the U.S. Bureau of Labor Statistics, employment of civil engineers is projected to grow 20% from 2012 to 2022.”

In December 2015, Congress passed the Fixing America’s Surface Transportation Act:
- 5-year, $305 Billion in funding for transportation infrastructure improvements

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TOPIC OVERVIEW (CONT'D)

• So, what does all of this mean?

• With 2013 ASCE Infrastructure grade of D+ AND

• Estimated investment of $3.6 Trillion needed to revitalize infrastructure AND

• Increased investment in/development of tech-centric enterprises:

• Industry must invest in STEM graduates

STATISTICS AND TRENDS
2025 WORKFORCE PLANNING
Spring 2016 College of Engineering Undergraduate Enrollment by Residency

- 24.5% Indiana Resident
- 31.1% Nonresident
- 44.4% International

Initial Post-Graduation Work Location (3-Year Survey of College of Engineering Baccalaureate Completers)

- 73.4% Employed in Indiana
- 23.6% Employed Outside Indiana
- 3.0% Employed Internationally

"Purdue University Spring 2016 College of Engineering Undergraduate Breakdown by Residency." Purdue University Data Digest. Purdue University Office of Enrollment Management. Web. 01 Mar. 2016.
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STATISTICS AND TRENDS

• According to the Purdue Center for Career Opportunities, top five destinations for baccalaureate engineering completers are:
  • Indiana, 23.6%
  • Illinois, 12.2%
  • Texas, 9.5%
  • Ohio, 6.4%
  • Michigan, 6.4%

• Average salary as of May 2014:
  • $61,434

CITIZENS ENERGY GROUP
TALENT DEVELOPMENT INITIATIVES
2025 WORKFORCE PLANNING
Purdue Road School
March 2016
Workforce Development
Mark C. Jacob | citizens energy group
Vice President | Capital Programs & Engineering and Quality Systems
Safety Topic

Accident Causes & Prevention

- Accident – an unplanned and unwanted event which may or may not cause injury and/or property damage
- 88% of accidents - caused by unsafe acts
- 10% of accidents - caused by unsafe conditions
The Citizens Public Charitable Trust

- Established 1887
- Operated since then as a public charitable trust
- For the benefits of the inhabitants of Marion County
- Does not operate the Trust passively
- Devise and implement strategies to build and renew the businesses of the Trust
- Keeping the Trust competitive and adding value creates greatest long term benefit for the beneficiaries of the Trust
Citizens Energy Group and CWA Authority Inc.

A Public Charitable Trust

- Energy
  - Citizens Gas
  - Steam
  - Chilled Water

- Water
  - Indianapolis (area) Water (1M customers)
  - Indianapolis (area) Wastewater (CWA)

- Shared Services
  - Corporate Support Services
  - Shared Field Services

- Citizens Resources
  - Kinetrex Energy
  - Oil Exploration & Production
  - Citizens Gas of Westfield
  - Citizens Southern Madison
  - Westfield Water
  - Westfield Wastewater
Infrastructure Challenges We Face

- Annually - 6 Billion gallons of sewage was flowing to the city’s streams and rivers
- $1.9 B Combined Sewer Overflow (CSO) Consent Decree
- Aging infrastructure and expansion needs
- Aging workforce
- Capital investments are a constant need
- Bring / keep our Water, Wastewater and Energy Utilities at acceptable / affordable performance levels
- Large and diversified water system
- Significant septic tank elimination project (STEP) needs
- Future water supply

Objectives:
1. Serve Peak
2. Reduce Peak

Primarily Lawn Irrigation

Source: Kings County Wastewater Treatment Division
Workforce Challenges We Face

- **Total Management**
  - Eligible to Retire Now: 21 employees
  - Eligible to Retire within 5 years: 4 employees
  - Eligible to Retire within 10 years: 10 employees

- **Total Staff**
  - Eligible to Retire Now: 132 employees
  - Eligible to Retire within 5 years: 13 employees
  - Eligible to Retire within 10 years: 30 employees

- **All CP&E Employees**
  - Eligible to Retire Now: 42 employees
  - Eligible to Retire within 5 years: 30 employees
  - Eligible to Retire within 10 years: 11 employees
III. Professional Obligations

2. Engineers shall at all times strive to serve the public interest.
   a. Engineers are encouraged to participate in civic affairs; career guidance for youths; and work for the advancement of the safety, health, and well-being of their community.
Strategies for Long Term Success

- Incorporate **Sustainability** – ‘EBC’s – Environment, Business, Community
- **Voice of the Customer**
- **Customer Affordability**
- **Safe, Affordable, Reliable** utility services
- **Partnerships for Excellence in Research & Learning (PERL)** – Partnerships with Purdue, IUPUI, Rose-Hulman, etc.
- **Vendor Partnerships** – Cost Controls, Innovation, Community Involvement
- **Economic Benefits** – Jobs
- **Peer City Collaboration** – Share experiences with other cities – Two way learning opportunities
- **Effective management** of the CSO **Consent Decree** - Our single biggest capital investment
Strategies for Long Term Success
Partnership for Excellence in Research and Learning (PERL)

POTENTIAL PARTNERSHIP OPPORTUNITIES:
• Enhanced consideration and use of Co-ops & Interns
• Partnership opportunities for senior design projects
• Sharing university research data (e.g. Purdue’s data on regional water supply or infrastructure integrity)
• Evaluate use of university technologies (e.g. Purdue owns ‘Soilermaker’...soil remediation)
• Research partnerships on topics such as:
  o Sustainability
  o Energy efficiencies
  o GIS applications
  o Water reuse
  o Water-quality modeling
  o Water and wastewater treatment alternatives
• Collaborate on infrastructure needs, trends, and patterns
• Training opportunities on active construction projects

SHORT AND LONG TERM GOALS & VISIONS (‘EBC’s):
✓ Gain better access to more / better data to benefit our environment (E)
✓ Help create more opportunities for our future business leaders and technical talent (B)
✓ Encourage more students to remain in Indiana / Indianapolis, after graduation (C)
Strategies for Long Term Success

Diversity

- Strengthening a diverse business community economically contributes to the overall economic growth of our markets.

- Minimum participation goals
  - 15% for Minority – Owned Businesses
  - 8% for Woman – Owned Businesses
  - 3% for Veteran – Owned Businesses

- In 2015, Citizens exceeded these goals with $128.6 million of spending with diverse suppliers:

<table>
<thead>
<tr>
<th>Eligible Expenditures</th>
<th>$364.2 million</th>
<th>% of Eligible Total</th>
<th>Supplier Diversity Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBE Expenditures</td>
<td>$63.4 million</td>
<td>17.5%</td>
<td>15%</td>
</tr>
<tr>
<td>WBE Expenditures</td>
<td>$49.8 million</td>
<td>13.7%</td>
<td>8%</td>
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<tr>
<td>VBE Expenditures</td>
<td>$15.4 million</td>
<td>4.2%</td>
<td>3%</td>
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<tr>
<td>Total MBE/WBE/VBE</td>
<td>$128.6 million</td>
<td>35%</td>
<td>26%</td>
</tr>
</tbody>
</table>
Strategies for Long Term Success

Community Involvement Statistics and Benefits

• Spreads the word about your values and intentions
• Get to know our customers and helps build stronger relationships with them
• Getting to know our vendors and build stronger relationships with them
• Over 50% of 18-26 year olds “would prefer to work for a company that offers volunteer opportunities
• Over 50% of those surveyed said a company’s work on charitable causes helped influence them to accept job
• Most consumers have a better outlook on businesses that give to a charity that they care about
• Americans gave over $350 billion in 2014 (a 7.1% increase from 2013)
• It is estimated total charitable contributions will total between $21 and $55 trillion between 1998 – 2052
• Over 98% of high net worth households give to charity
• 63% of high net worth donors cite “giving back to the community” as a chief motivation for giving
• In 2015 there were over 1.5 million charitable organizations in the United States
Strategies for Long Term Success
Part of the Community

Employees Pave the Way for Another Successful United Way Campaign in 2014

2014 United Way Campaign Key Events and Highlights:
- Free Campaign Open House at the Marilleva, facility on August 31
- Cheer-N-R-A Breakfast at the Langlecy and Penny Offices on September 5
- Cheer-N-R-A Breakfast at Washington on September 10
- Hamburgers and Hot Dog Cookout at the Corporate Office on September 12
- Ten volunteer offices will have the parking pass of their choice next year at the Language and Corporate Office facilities.
- Over $22,000 was awarded to retiring employees through the daily donor rallies conducted during campaign week.
- A total of 100 former employees were invited to attend the campaign.

In addition to the 457 employees (including 67 new donors) who contributed to Citizens United Way Campaign drive for 2014. As a result of their generosity, employees (including leadership) contributed $150,000. After adding the company contribution which matches the employee giving amount, and additional employee donations through special events, the grand total contribution for 2014 was over $200,000.

As to the case each year, the United Way Campaign provides our employees an opportunity to help those who are less fortunate in our community by participating in the company’s various fundraising events, and making cash and paycheck pledge donations.

Here is a breakdown of this year’s contributions:
- Employee contribution: $150,000
- Leadership contribution: $20,000
- Company employee match contribution: $33,500
- Special event contribution (donated outside of pledge): $3,500

In addition to Elly Endowment is matching Citizens’ new donor contribution amount.

Help Three Local Families this Holiday Season through the Paul Riggins Giving Tree

As the upcoming holiday season draws near, Citizens looks forward to honoring its annual community tradition. "The Paul Riggins Giving Tree provides another opportunity to make a difference for those who are less fortunate by honoring the memory of the late, Citizens retiree Paul Riggins. The project began 20 days before Christmas in 1992 when Paul decided to fulfill the lifelong dream of giving back to his community," said Dr. H. "The Paul Riggins Giving Tree is given again this year,” said Elly Endowment with United Way to identify three Marion County families. To help accomplish this, we will need the help of our entire community! On December 14, 2014, we will be kicking off the Paul Riggins Giving Tree by delivering gifts to the three local families who are the new recipients of the Paul Riggins Giving Tree.

Citizens Partners with IFD Recruits in “Badges to Burn Camp” Hydrant Project

Project Intended to Help Citizens and IFD Give Back to Burn Survivors and Community

Citizens Energy Group teamed up with the Indianapolis Fire Department (IFD) on October 3 to paint the town red and raise money for a great cause. Under the direction and supervision of Paul Dixon, Director of Fire Prevention for IFD, Citizens Water Distribution 2 members of the IFD Recruiting and Training/500 hydrants in the downtown Citizens also provided all of the supplies needed for the event, which is known as “Badges to Burn Camp” is part of a requirements class to select, develop, and depict a community action plan.

Many Thanks to our Employees Who Contributed to This Year’s United Way Campaign

This year’s United Way Campaign was another big success for our employees. Multiple events were conducted at the Post Office throughout the week of August 28. The campaign kicked off on Tuesday with Standard Banking, coming to the Language and the General Office, and our annual craft fair at the Post Office on Thursday. On Thursday, there was an open house for employees, and another ice cream social with a water gun battle at the General Office. In addition, different from a number of Department advancement to be donated numerous things from the fellow employees.

Despite the decision to drop the following option automatic deduction donations year after year without formal actions, 185 employees still made pledges for 2014. Of those 252 employees, 13% increased their pledge donations for the year. This year’s total amount contributed was $85,000 to United Way, and their donations will certainly help many in need in Central Indiana. 
Strategies for Long Term Success
Sustainability

What the Engineer Said: “The purpose of this white paper is to start the discussion for an outline of potential elements of an overall sustainability initiative or charter for Citizens Energy Group (CEG), which consist of green infrastructure projects, the use of sustainability rating systems, sustainable metrics, and coordination across CEG business units and potentially with partners outside the utility as well. Due to its recent integration of energy, water, and wastewater business units, CEG currently has an unprecedented opportunity to implement sustainable projects and initiatives to reduce capital costs, improve the natural environment, increase energy efficiency, and provide aesthetic benefits and reduced costs to its customers, within its unique characteristics and consolidated utilities and significant operational and capital programs....”

What the CEO Said: “…it’s really about the EBC’s....The Environment, the Businesses, and the Community. A strong utility supports strong EBC’s and strong EBC’s make a strong utility.”

Environment: “...our efforts to sustain our environment are being achieved through unprecedented infrastructure investments in each of our utility systems.”

Business: “As we make wise long-term investments in our utility systems, we are sustaining our business through disciplined cost control efforts; sound financial and strategic planning; adherence to documented quality processes; and development of new businesses to support community investment activities”.

Community: “...promote development of a more sustainable community” (e.g. Winter wise, education, Earth Day, environmental clean up, day of sharing, sustainable neighborhoods, youth programs, etc.).
Water Utilities – At a Glance
(Acquired August 26, 2011)

• Acquired Indianapolis Water Utility
  – serving 1 million customers in 6-county area
  – system previously operated by Veolia Water
  – now operated by staff transferred to CEG

• Acquired Indianapolis Wastewater Utility
  – system serving 800,000 people in Marion County
  – operated by United Water under contract to CEG
  – 8,000 septic tanks to address
  – $2 B CSO Consent Decree
Integrated Water Resource Plan (25 & 100 years)

IWRP Supply Plan

Projected Available Supply (MGD)

System Capacity Target
(Demand Forecast + 5%)

Water Reuse
New Water Storage
New Surface and Groundwater Supplies
Water Wise Initiatives
System Optimization

Integrated Water Resource Plan

Deficit Resolved via Watering Restrictions

Additional Resources in IWRP

Current Moderate Drought Supply Available

Volume per Day (MGD)

2013 2017 2021 2025 2029 2033 2037

36 MGD  82 MGD

System Yield 2012 (Moderate Drought)
GEIST DEEP WATER STORAGE

- **Location:** Olio Road & Geist Reservoir
- **Property:** 74 Acre / 8 Acre Potential Plant Site
- **Quarry Depth:** 230 Feet
- **Geist Reservoir:** 6.7 Billion Gallons
- **Quarry Water Storage:** 3.2 Billion Gallons
- **Supply:** 20-25 MGD (Summer Supply)
- **Projection:** 10-15 Years System Growth
Combined Sewer Overflow Consent Decree Dashboard
(updated 03/07/15)

**Consent Decree Budget**
(2012 Dollars)
- $3.0 B
- $2.0 B
- $1.0 B
Current
- Consent Decree currently $330 M under budget

**Primary Consent Decree Projects**
- **WHITE RIVER TUNNEL**
  - In design
  - Complete in 2021
  - One year ahead of schedule
  - 5 miles
- **FALL CREEK TUNNEL**
  - In design
  - Complete in 2025
  - Two years ahead of schedule
  - 4 miles
- **LOWER POGUES RUN TUNNEL**
  - In design
  - Complete in 2021
  - One year ahead of schedule
  - 2 miles
- **EAGLE CREEK TUNNEL**
  - In planning
  - Complete in 2018
  - On schedule
  - 2 miles
- **BELMONT AWT PLANT**
  - Completed 2012
  - Upgraded to 300 MGD
- **SOUTHPORT AWT PLANT**
  - In construction
  - Complete in 2017
  - On schedule
  - Upgrade to 250 MGD
- **DEEP ROCK TUNNEL CONNECTOR AND PUMP STATION**
  - In construction
  - Complete in 2017
  - On schedule
  - 8 miles

**CSO Volume Removed**
(2012–2025)
The total volume of CSO prevented from entering Indianapolis waterways would fill Lucas Oil Stadium more than 550 times.

From 2012–2025, Citizens will prevent 213.4 billion gallons (BG) of combined sewer overflows from entering Indianapolis waterways by implementing Consent Decree projects and by effectively operating and maintaining their treatment plants and wastewater system.

**Quick Links**
Follow these links to learn more about Consent Decree projects and programs:
- Overview 1
- DigIndy Tunnel System 2
- Deep Rock Tunnel Connector Pump Station 7
- Eagle Creek CSO Abatement Project 9
- Advanced Wastewater Treatment Plants 10
- Consent Decree Schedule 13
- Timeline of Key Consent Decree Dates 14
- Annual CSO Remaining 15
- Economic Impacts 16
- Strategies for Success 17
- Non-Project Programs and Requirements 18

**Combined Sewer Overflow Control Measures**
- Actual: 64
- Original: 53
- Control Measures Completed:
  - 2001: 32
  - 2006: 53
  - 2011: 53
  - 2016: 64
  - Today: 64

Control Measures are associated with projects and specific design and performance criteria in the Consent Decree. Citizens is currently ahead of schedule on Control Measure completion.

**DigIndy Tunnel System Construction Timeline**
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025
Deep Tunnel System Components

Robbins Main Beam Tunnel Boring Machine
http://www.youtube.com/watch?v=I0YqpZCoYEQ
Deep Rock Tunnel Connector Pump Station Update

39’ Diameter

DRTC Tunnel
Launch Shaft  18’ Diameter

60’W x 100’L x 66’H

FACT SHEET
- Pumps are “dry pit vertical centrifugal”.
- 3 pumps need 4,500 kilowatt – hours
- Deepest floor is almost 280 feet below the ground surface
- Cavern excavation produced over 16,000 cubic yards of rock
- Pump Station houses four (4) 30MGD pumps
- Each pump is rated at 2,000 horsepower
- Flow enters the Pump Station through a 72-inch diameter tunnel extending from the Screen & Grit Shaft
- Pumps discharge into twin 42-inch diameter pipes
- Water is lifted over 300 feet before flowing into Southport AWT

PROJECT DESCRIPTION
The Deep Rock Tunnel Connector captures and conveys combined sewer overflows to the pump station. The core function of the pump station is to empty the tunnel system and deliver the flow to the Southport Advanced Wastewater Treatment Plant.

PROJECT STATS
- Project in construction
- Pump room is approximately 270 feet below grade
- Located at Southport Advanced Wastewater Treatment Plant
- Four main tunnel pumps for dewatering are each rated at 30 MGD
- Pump station firm capacity (with one pump out of service) of 30 MGD
- Project to be completed by December 31, 2017
Southport Advanced Wastewater Treatment Plant Update

Projects: 1) Headworks 2) Secondary Expansion 3) Primary Clarifiers  and 4) Wet Weather (UV) Disinfection

Contractor: Bowen Engineering Corporation
Bid Price: $87,584,040.00
Notice To Proceed Issued: March 27, 2014

- New screening and grit removal @ Headworks
- Evaluate need for pump station upgrades
- Relocate 60” ANS effluent line (now online)
- Add UV Disinfection for 150 MGD
- Rehab existing 60” ANS effluent line (now online)

Secondary
- Convert ANS tanks to reverse flow
- New mixed liquor channel to convey flow to ONS
- Increase ONS capacity and rehab clarifiers
- Rehab north Primary Clarifiers – wet weather flow
- Convert south primary clarifiers – dry weather flow
Steam System Overview

- Perry K - Second largest steam utility in U.S.
- 8 boilers: Converted to natural gas
- 24 Miles of Distribution Piping / 700 Manholes
- Covanta Energy – Refuse incinerator provides 50% of steam supply for Citizens’ steam system
- Natural Gas usage nearly 4.5 BCF
- Controls are newest technology
- System peak is 1,500,000 lb/hr (Jan 2014)
- Serves about 200 institutional, commercial and industrial customers (Including: Eli Lilly, Lucas Oil Stadium, IU Health, IN Gov Center, downtown hotels)
- O & M

Gas and Oil System Overview

- 260,000 customers – Marion County
- 3,000 customers – Westfield
- 245 miles of 20” transmission line including line from Greene County
- Five primary suppliers – Panhandle, Texas Gas, Rockies Express, Heartland, Midwest Gas Transmission
- 4,000 miles of distribution mains
- 4,000 miles of service lines
- Underground Storage – 7 Bcf
- LNG storage facility, 1 Bcf
- Oil Field producing 225 barrels a day
• Started in ME in 1954
• Now serving **45** majors in **8** colleges:
  – Agriculture, Engineering, Health & Human Sciences, Liberal Arts, Management, Pharmacy, Purdue Polytechnic, and Science
  – **32** faculty coordinators
  – **26** faculty coordinators in Engineering, Polytechnic, and Science
• **8** staff members
5-Session Co-Op Program
- Recruit students during first year
- Attend callout beginning of second semester
- Minimum GPA of 2.8
- First work session either summer or fall after first year
- Alternating academic and work sessions afterward
- Total of 5 work sessions (~16-20 months)
- Typically 2 summer and 3 spring and/or fall
- Students graduate in 5 years
- Global work sessions are possible

3-Session Co-Op Program
- Callouts year round, focused during IR
- Minimum GPA of 2.6
- Students in fourth semester or higher
- Much more flexible, can start as late as third or fourth year in summer, fall, or spring
- Alternating academic and work sessions afterward
- Total of 3 work sessions (~12 months)
- Typically 1 summer, 1 spring, and 1 fall
- Students graduate in 5 years
- Global work session possible
Active Professional Practice Students by Program

- 5-Session: 431, 436, 455, 425, 404
- 3-Session: 142, 167, 180, 257, 259
- Domestic Interns: 129, 146, 162, 217, 256
- GEARE: 100, 150, 171, 207, 259
- Global Interns: 21, 22, 52, 23, 18
- Study Abroad*: 0, 0, 0, 0, 10

RECRUIT ONCE, HIRE TWICE

2025 WORKFORCE PLANNING
2025 Workforce Planning

Recruit Once, Hire Twice

- Why utilize Cooperative Education as a means to realize Human Resource needs?
  - Discover ambitious students early
  - Assess potential permanent hire prior to graduation
  - Enhance campus recruiting reputation

- Average recruiting cost:
  - $3,582

• Co-Op Students vs. Interns
  • Duration of Engagement
    • Intern: generally, one semester or summer in length.
    • Co-Op: Three or Five work rotations over four years.
  • Work Product
    • Intern: Usually, one limited duration project.
    • Co-Op: Several projects, occasionally spanning multiple work rotations. Tasks escalate in complexity as student progresses in studies.
  • Work Experiences
    • Intern: Limited exposure to one segment of business/engineering cycle.
    • Co-Op: Deep exposure to one segment of business across multiple rotations OR opportunity to experience multiple areas of business.
In next ten years, there will be an exceptionally high demand for STEM graduates.
  - FAST Act creates significant investment in infrastructure, yielding large demand for new Civil Engineers.

Indiana MUST retain the STEM talent it produces.
  - Only 23.6% of Purdue Engineering BS graduates remain in Indiana post-graduation.

Talent Development Initiative: Citizens Energy Group established **Partnerships for Excellence in Research & Learning (PERL)** to better connect with Indiana’s STEM institutions, creating a sustainable talent pipeline.

Establishing a Cooperative Education program can help organizations to “Recruit ONCE, Hire TWICE.”
  - Reduce recruitment costs, fill talent pipeline.
  - Cooperative Education at Purdue is facilitated by the Office of Professional Practice ([www.opp.purdue.edu](http://www.opp.purdue.edu)).
2025 Workforce Planning Questions

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