



School of Sustainability  
Engineering and  
Environmental Engineering

**WELCOME**

# ***SEE RECOGNITION NIGHT***

***SENIOR DESIGN POSTER SESSION // 6:00 - 7:15 P.M.***

***PREPARED REMARKS // 7:15 P.M.***

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#10

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*ENVIRONMENTAL  
ENGINEERING  
PROGRAM IN THE NATION*

*U.S. News & World Report (2026)*

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*SEE PROFESSIONAL  
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*"HER DEDICATION, RELIABILITY, COMMUNICATION, AND SOCIAL INTELLIGENCE LEFT A LASTING POSITIVE IMPACT ON THE SACRAMENTO CAROLLO OFFICE DURING HER SUMMER 2025 INTERNSHIP."*

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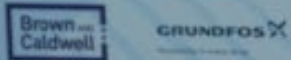
## STUDENT DESIGN COMPETITION

### Circular Water Economy Division

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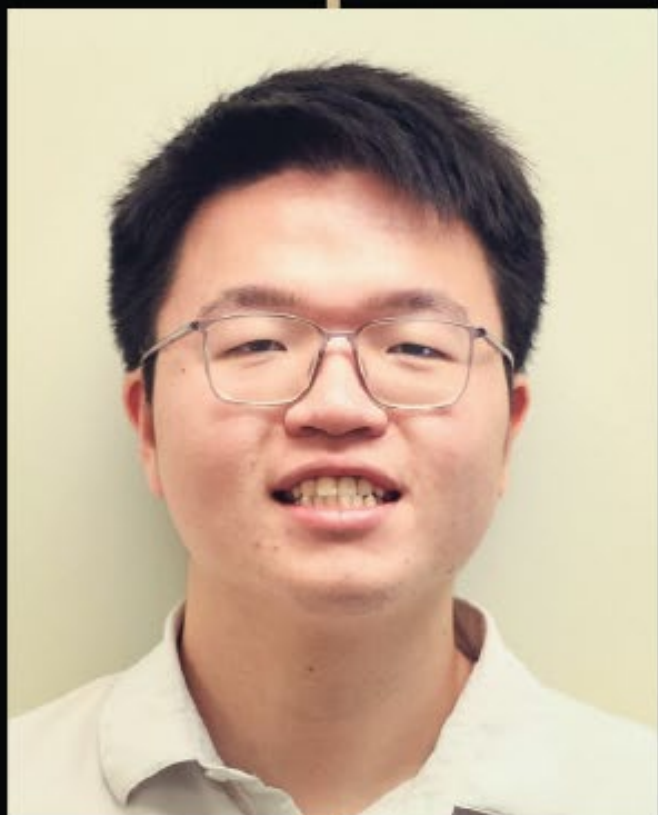


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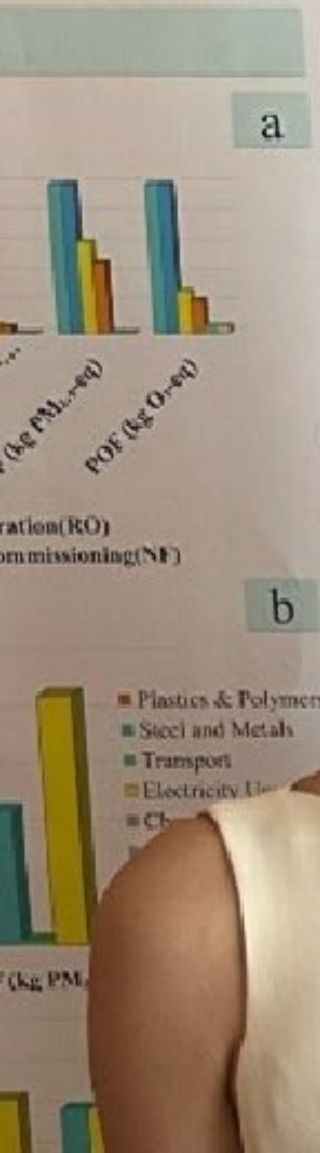
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*3RD PLACE, 2026 ENVIRONMENTAL  
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MENTORS PROGRAM*

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# How old is too old? Quantifying the problem of temporal representativeness in LCI data

Heyichen Xu<sup>1</sup>, Kurt Rosentrater<sup>2</sup> & Heather Liddell<sup>1</sup>

<sup>1</sup>School of Sustainability Engineering and Environmental Engineering, Purdue University, West Lafayette, IN  
<sup>2</sup>Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA



## ABSTRACT

The reliability of Life Cycle Assessment (LCA) can be undermined by reliance on outdated background data in life cycle inventory (LCI) datasets when foreground data are unavailable. Despite efforts to seek representative datasets, publicly available data on many processes are sparse, forcing practitioners to choose between old data or none. The community lacks clear guidance on data obsolescence in LCA—how old is too old?

## INTRODUCTION

- LCA and energy modeling studies rely on accurate industrial process energy use data, yet many widely used background datasets are decades old.
- Process-level energy data from the 1980's remain widely cited. Indirect citations to older primary datasets in newer publications compound the problem.
- Energy intensity of most industrial sectors and processes has decreased dramatically over this period.

Direct Citations to Energy Analysis of 108 Industrial Processes (Brown, multiple editions 1979, 1985, 1996)



With few newer citations are still in old energy data has



## RESULTS

Direct citations use legacy data explicitly in a new analysis. Indirect citations use legacy data indirectly by citing newer sources that relied on the legacy data.

**Direct Citations to Legacy Energy Data - Examples**

Author (Year)	Source	Usage/Context
...	...	...

**Indirect Citations to Legacy Energy Data - Examples**

Author (Year)	Source	Legacy Dataset
...	...	...

## STUDY METHODOLOGY

To investigate the prevalence, impact of industrial energy datasets in model actions, for improving temporal relevance

## METHODOLOGY



**FIRST PLACE, ACLCA NATIONAL SUSTAINABILITY CONFERENCE STUDENT POSTER COMPETITION**

**HEYICHEN XU**

VOLUNTEER VOLUNTEER VOLUNTEER

VIGNETTE # CORN ETHANOL

*2025 ACLCA MICHAEL LEVY  
RISING STAR AWARD*

**HEATHER LIDDELL**



SEE IN THE NEWS

*ASSISTANT PROFESSOR CAITLIN  
PROCTOR CHOSEN TO SPEAK AT  
AMERICAN WATER WORKS  
ASSOCIATION WATER QUALITY  
TECHNOLOGY CONFERENCE*



***BRAVO***+

**AWARD**



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**MICHELLE  
INDARJIT**

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PROFESSIONAL PRACTICE  
HALL OF FAME*  
**ANGELA JENKINS,  
SEE ALUMNA & FOUNDING MEMBER**





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*U.S. News & World Report (2025)*

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Laura Almeida Tinjaca (*MS Thesis*)

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Chloe Barna

George Barth

Tripta Bhattacharjee

Maaz Bin Naseer

Radhika Bhopatkar (*PhD*)

Taymee Brandon (*PhD*)

Daniel Ceglio (*MS Thesis*)

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Parker Davenport

Zachary (Zach) Dichtl (*PhD*)

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Aliya Ehde (*PhD*)

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# SAVE-THE-DATE

## CELEBRATING 20 YEARS OF INNOVATION, IMPACT AND SUSTAINABILITY

**OCTOBER 15, 2026**  
3:30 – 6:30 P.M.

What started as an idea in the early 2000s has grown into one of the nation's leading environmental engineering programs. From the launch of EEE to its continued success within SEE, this 20-year journey reflects continuous evolution, collaboration, and impact. We celebrate not just a milestone, but a movement—one that continues to shape a more sustainable world.

LEARN MORE AT [ENGINEERING.PURDUE.EDU/SEE](https://engineering.purdue.edu/see)

*KEYNOTE ADDRESS • POSTER SESSION • ALUMNI PANEL • ELEVATOR PITCH*