NSPE-WI™ WISCONSIN SOCIETY OF PROFESSIONAL ENGINEERS

2025 NSPE – WI Virtual Discovery Conference

"How Legislation is Changing Our Engineering Landscape"

March 18 – April 23

No.	Engineering Discipline	Date	Time (CST)	PDH	Speaker	Presentation Title
1a	Ethics	Tuesday March 18	12:00 – 1:30 PM	1.5	Rebecca Bowman, Esq., PE, D.F.E.	The Corporate Transparency Act – Resistance is Futile
1b	Electrical Energy	Wednesday March 19	12:00 – 1:00 PM	1.0	Dr. Dereck Sutherland, PhD	Overview of Private Fusion Development
1c	Safety	Thursday March 20	12:00 – 1:00 PM	1.0	Josh DeBroux	Re-Thinking Non-Ionizing Radiation…and That Cell Phone in Your Pocket
2a	Civil	Tuesday March 25	12:00 – 1:30 PM	1.5	Fred Groth, PE, SE	Challenges of Designing the Wisconsin History Center (WHC)
2b	Electrical	Thursday March 27	12:00 – 1:00 PM	1.0	Dr. Barry Van Veen, PhD	Fundamentals of Artificial Intelligence with Engineering Implications
3a	Software	Tuesday April 1	12:00 – 1:00 PM	1.0	Evan Wing	How the Fire Protection Industry has had to Change Product Designs Due to Legislative Changes Over the Years
3b	Environmental	Thursday April 3	12:00 – 1:00 PM	1.0	Dr. Zhiyong Cai, PhD	Sustainable Production and Applications of Biochar-based Composites

Total PDH's 8.0

Please circle PDH hour noting course you attended along with initial under. Conference organizers recommend that in addition to this brochure , retain any session handouts or personal notes. DSPS rules indicate that they can request this information to confirm attendance and content of PDH sessions in case of audit.

By my signature, I attest that I attended the above circled PDH hour marked sessions in their entirety and qualify for the PDH's assigned.

Printed Name: _____ Total PDH's Earned for Sessions Attended _____

Signature: _____

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No.	Engineering Discipline	Date	Time (CST)	PDH	Speaker	Presentation Title
4a	Civil	Tuesday April 8	12:00 – 1:30 PM	1.5	Samantha Herheim, PE Aaron Passow Alex DeSmidt	Lower Yahara River Trail: Making Connections
4b	Bio-Medical	Wednesday April 9	12:00 – 1:00 PM	1.0	Dr. Wally Block, PhD	Using Engineering Principles in Image-Guided Surgery
4c	Transportation	Thursday April 10	12:00 – 1:00 PM	1.0	Dr. Bulent Sarlioglu, PhD	Electrification of Aircraft from More Electric to Hybrid and All Electric Aircraft
5a	Legislative	Thursday April 17	12:00 – 1:00 PM	1.0	Philip Giles	Shaping the Future of Engineering: Policy and Advocacy in a Changing Landscape
6a	Civil	Tuesday April 22	12:00 – 1:00 PM	1.0	Angela Adams, PE Todd Matheson, PE	WisDOT's Implementation of the Infrastructure Investment & Jobs Act (IIJA) Bipartisan Infrastructure Law (BIL)
6b	Ethics	Wednesday April 23	12:00 – 1:30 PM	1.5	Rebecca Bowman	Ethics: "The Implications of Overturning Chevron – You've Got Your Voice Back"

Total PDH's 7.0

Please circle PDH hour noting course you attended along with initial under. Conference organizers recommend that in addition to this brochure , retain any session handouts or personal notes. DSPS rules indicate that they can request this information to confirm attendance and content of PDH sessions in case of audit.

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NSPE-WI

Virtual Session No. 1a

(1.5 PDH)

Tuesday, March 18, 2025 12:00 – 1:30 PM CST

Speaker: Rebecca Bowman, Esq., PE, D.F.E.
Representing: Rebecca A Bowman, Esq., PE
Topic: The Corporate Transparency Act – Resistance is Futile

Almost all entities other than sole practitioners are subject to the Corporate Transparency Act, which went into effect in 2024 and full enforcement in 2025. However, many engineering firms do not understand the short- and long-term implications of the law's requirements. We'll look at the background and context, the immediate requirements, and the sneaky down-the-road requirements. We'll also look at alternative approaches to compliance.

Virtual Session No. 1b

(1.0 PDH)

Wednesday, March 19, 2025 12:00 – 1:00 PM CST

Speaker: Dr. Derek Sutherland, Ph.D.
Representing: Realta Fusion
Topic: Overview of Private Fusion Development

Overview of fusion energy and how Realta Fusion is developing magnetic mirror technology to advance commercial fusion energy.

Virtual Session No. 1c

(1.0 PDH)

Thursday, March 20, 2025 12:00 – 1:00 PM CST

Speaker: Josh DeBroux
Representing: Inner Sanctum LLC
Topic: Re-Thinking Non-Ionizing Radiation…and That Cell Phone In Your Pocket

From Bluetooth pacifiers or diapers, 5G, "wearables" in the workplace, "smart" everything including meters on the home and yes, your cell phone, our exposure to various forms of non-ionizing radiation has exponentially increased in the last 25 years. We need to challenge the original, underlying assumptions that formed the safety standards we have today for this radiation. The technology has rapidly evolved, yet safety standards have not.

There are literally thousands of studies showing adverse biological effects from this ubiquitous non-ionizing radiation. Efforts to get regulatory and industry stakeholders to acknowledge this growing threat have largely been ignored, leaving all of us exposed to a hazard that few truly understand.

Virtual Session No. 2a

(1.5 PDH)

Tuesday, March 25, 2025 12:00 – 1:30 PM CST

Speaker: Fred Groth, PE, SE
Representing: GRAEF
Topic: Challenges of Designing the Wisconsin History Center (WHC)

Talk will focus on the design challenges. The challenges included maximizing the building foot print on a very tight site such as adding a new basement that is 20 feet lower than the adjacent existing Churchill building which meant underpinning Existing Churchill Building (Historic Building and 1st high rise building in Madison, WI) which has a party wall that was shared with adjacent building to be demolished. Also cantilevered over the back alley to property line and placing footings tight to property lines and still achieving set back required by City of Madison.

Other challenges included architectural design required building to be rotated at the 3rd level 11 degrees which shifted location of columns at perimeter; New Wisconsin History Center is also 20 feet taller than existing Churchill Building so Churchill Building had to be reinforced for additional snow loadings and no existing drawings existed for the Churchill Building roof.

Virtual Session No. 2b

(1.0 PDH)

Thursday, March 27, 2025 12:00 – 1:00 PM CST

Speaker: Dr. Barry Van Veen, Ph.D.
Representing: University of Wisconsin - Madison
Topic: Fundamentals of Artificial Intelligence with Engineering Implications

Artificial Intelligence and Machine Learning (AI/ML) has emerged as transformative technology that impacts all of society. AI/ML tools can give amazing results but also can fail spectacularly. This presentation describes fundamental principles underlying AI/ML and considers corresponding implications for successful engineering application.

Virtual Session No. 3a

(1.0 PDH)

Tuesday, April 1, 2025 12:00 – 1:00 PM CST

Speaker: Evan Wing
Representing: Flaim Systems
Topic: How the Fire Protection Industry Has Had to Change Product Designs Due to Legislative Changes Over the Years

This safety presentation highlights the challenges of workplace safety and fire training while demonstrating how XR adapts to industry and generational demands. Key environmental concerns, such as resource consumption, regulatory pressures, and fire bans, which limit the availability and sustainability of live training, will be discussed. Public safety challenges, including health risks and the difficulty of creating controlled, realistic scenarios for trainees of varying experience levels, are also addressed.

The presentation showcases how XR solutions provide safe, sustainable, and cost-efficient training. A hands-on VR demonstration allows participants to experience how the technology replicates dangerous scenarios, adjusts to individual skill levels, and delivers actionable feedback through performance tracking. The session concludes with a Q&A to address specific concerns, ensuring attendees gain a clear understanding of XR's benefits and applications in modern fire training.

Virtual Session No. 3b

(1.0 PDH)

Thursday, April 3, 2025 12:00 – 1:00 PM CST

Speaker: Dr. Zhiyong Cai, Ph.D
Representing: USDA Forest Service
Topic: Sustainable Production and Applications of Biochar-Based Composites

Biochar is a porous carbonaceous material derived from biomass feedstock, woody wastes, and agricultural residues. Pristine biochar contains surface functional groups that enable biochar's wide applications in many environmental fields including soil remediation, wastewater treatment, and carbon sequestration. Biochar is generally made into particulates like powders or small granules. Powdered biochar cannot be recycled or reclaimed after use and is usually difficult to remove or recovered from water treatment reservoirs and soil applications. To enhance the utilization of biochar, scientists from USDA Forest Products Laboratory developed a process to produce innovative biochar composite boards by gluing biochar particles with natural binders (lignin, starch, carbohydrates, and tannins) after thermal treatment (baking, pyrolysis, carbonization, or graphitization). These produced biochar composite boards contain high carbon content, high porosity, large geometric, and adsorption surface areas rich of functional groups, low density, high corrosion resistance to chemicals, strong mechanical strength, low thermal expansion, tunable thermal conductivity, and excellent flammability resistance. This green product is 100% biomass waste, with no petroleum-based binders.

Virtual Session No. 4a

(1.5 PDH)

Tuesday, April 8, 2025 12:00 – 1:30 PM CST

Speaker: Samantha Herheim, Aaron Passow, and Alex DeSmidt
Representing: KL Engineering/Dane County Parks
Topic: Lower Yahara River Trail: Making Connections

Dane County, Wisconsin's vision of connecting the cities of Madison, McFarland, and Stoughton started with Phase 1 of the Lower Yahara River Trail, completed in 2017. It continues with Phase 2, completed in 2024, which includes 1.6 miles of paved trail, boardwalk, and bridge. The trail connects Fish Camp County Park and Lake Kegonsa State Park and includes scenic lookouts along the boardwalk near the Lake Kegonsa shoreline and an accessible fishing pier, accessible kayak launch, accessible walk-in kayak ramp, and redesigned parking area at Fish Camp County Park.

Virtual Session No. 4b

(1.0 PDH)

Wednesday, April 9, 2025 12:00 – 1:00 PM CST

Speaker: Dr. Wally Block, Ph.D.
Representing: University of Wisconsin - Madison
Topic: Using Engineering Principles in Image-Guided Surgery

Magnetic Resonance Imaging (MRI) is evolving beyond its traditional role in diagnostics to become a powerful tool for image-guided therapy and precision intervention. This presentation will explore recent advancements in image-guided device guidance, focusing on how real-time imaging is transforming the accuracy and effectiveness of medical procedures. Key topics include:

- Image-Guided Device Guidance
- Image-Guided Therapy
- Prostate Cryoablation
- Neurosurgical Trajectory Guidance

Virtual Session No. 4c

(1.0 PDH)

Thursday, April 10, 2025 12:00 – 1:00 PM CST

Speaker: Dr. Bulent Sarlioglu, Ph.D.
Representing: University of Wisconsin – Madison WEI
Topic: Electrification of Aircraft from More Electric to Hybrid and All Electric Aircraft

The rapid electrification of aircraft is paving the way for hybrid and all-electric propulsion systems, a transformative era in aviation. As the industry seeks sustainable solutions to reduce its environmental impact, electrification is emerging as a key enabler of cleaner, quieter, and more efficient air travel.

This presentation will examine the state of the art of commercial aircraft technology, highlighting the latest advancements in hybrid-electric and fully electric propulsion systems. Dr. Sarlioglu will explore how these cutting-edge innovations are shaping the future of aviation by reducing fuel consumption, minimizing greenhouse gas emissions, and significantly lowering noise pollution.

However, the transition to hybrid and all-electric aircraft presents unique engineering challenges. Achieving commercial viability requires groundbreaking developments in high-power electric motors, advanced power electronics, and next-generation battery systems with higher energy densities, improved safety, and faster charging capabilities. Additionally, thermal management, weight optimization, and infrastructure adaptation are crucial factors that must be addressed to enable widespread adoption.

The aviation industry is moving closer to a more sustainable future by pushing the boundaries of aeronautical engineering and energy storage. This presentation will provide insights into the technological breakthroughs, regulatory considerations, and future prospects of electric aviation, offering a glimpse into the next generation of cleaner, quieter, and more efficient air travel.

Virtual Session No. 5a

(1.0 PDH)

Thursday, April 17, 2025 12:00 – 1:00 PM CST

Speaker: Philip Giles
Representing: NSPE
Topic: Shaping the Future of Engineering: Policy and Advocacy in a Changing Landscape

This presentation will explore the evolving landscape of engineering practice through the lens of policy and advocacy. It will address key issues impacting professional licensure, legislative efforts, and the broader challenges and opportunities for engineers in a dynamic regulatory environment. The discussion will include the current state of engineering policy at both the state and national levels, with a focus on how advocacy efforts are shaping the future of the profession. Insights will be shared on how various stakeholders are responding to these challenges and the importance of effective policy-making and advocacy in ensuring the continued relevance and growth of the engineering field.

Virtual Session No. 6a

(1.0 PDH)

Tuesday, April 22, 2025 12:00 – 1:00 PM CST

Speaker: Angela Adams, PE and Todd Matheson, PE
Representing: WisDOT
Topic: WisDOT's Implementation of the Infrastructure Investment & Jobs Act (IIJA) Bipartisan Infrastructure Law (BIL)

IIJA (BIL) funds were approved by Congress and signed into law by the President in 2021. As a nation, the 5-year total infrastructure investment was approximately 1.2trillion to be allocated for Federal Fiscal Years 2022-2026. Wisconsin is expected to receive around $1.1 billion in formula funding through the BIL, which is an increase of about 25%. BIL also provided funds through discretionary grant programs. WisDOT and other local agencies have applied for and been awarded several grants. A few of WisDOT's larger projects that received discretionary grant awards will be discussed in the presentation. In addition, WisDOT will share the status of hiring engineers to deliver the WisDOT infrastructure programs.

Virtual Session No. 6b

(1.5 PDH)

Wednesday, April 23, 2025 12:00 – 1:30 PM CST

Speaker: Rebecca Bowman, Esq., PE, D.F.E.
Representing: Rebecca A Bowman, Esq., PE
Topic: The Implications of Overturning Chevron – You've Got Your Voice Back

For 40 years, the courts had given broad deference to agency interpretation of authorizing legislation. In 2024, there was a signal that the Supreme Court was unhappy with that situation and a subsequent, dramatic revision. For the first time in nearly 40 years, there are circumstances under which a party affected by an over-reaching agency regulation may be able to successfully challenge that regulation with a realistic possibility of getting it stricken.