



SPE/PEDHA Workshop— Petroleum Engineering Education: Energy Transition Impact

8–9 August 2022 | Colorado School of Mines | Golden Colorado

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Marshall Watson
Texas Tech University

The energy transition is happening, intelligent production systems are changing oil and gas operations, and the pandemic has changed how and where we work. In this rapidly changing landscape, we educate engineers that are entering this industry. This meeting will address how these changes are causing threats in recruiting, educating, and retaining petroleum engineers for the future. This workshop will address these challenges and create a road map for petroleum programs and curriculum to meet these challenges head-on and succeed in this new environment.

The workshop is a joint effort of the SPE Education & Accreditation Committee and the Petroleum Engineering Department Heads Association (PEDHA).

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Society of Petroleum Engineers

About SPE

SPE is the largest individual member organization serving managers, engineers, scientists and other professionals worldwide in the upstream segment of the oil and gas industry.

PETROLEUM ENGINEERING
Department Heads Association

About PEDHA

The mission of the Petroleum Engineering Department Heads Association shall be to encourage mutual cooperation among Petroleum Engineering Educational Institutions in order to promote world-wide excellence in petroleum engineering education.

All technical sessions will be held at Paraty ABC on the first floor, one level above the front desk.

Monday, 8 August

0700–0800 Grand Lobby
Registration Check-In
Continental Breakfast

0800–0830 Metals Hall
Welcome and Opening Comments

Speakers: Paul Willhite, University of Kansas
 Runar Nygaard, University of Oklahoma
 Jennifer Miskimins, Colorado School of Mines

0830–1030 Metals Hall
Session 1: The Energy Transition

Chairs: Nathan Meehan, CMG Petroleum Consulting
 Tom Blasingame, Texas A&M University

The global mix of energy options will be an “addition” scenario in the short-term (next 20 years) and fossil fuels are expected to peak during the mid-term (2030-2040 [coal], 2040-2050 [oil], 2060-2070 [gas]). In addition, the global utilization of renewables will be highly variable — with rapid deployment in the short-term (next 20 years) in wealthier countries where renewables can be both mandated and supported via incentive pricings. The ultimate path for de-carbonization will depend on the geographical distribution of various fossil resources (oil, gas, and coal) and non-fossil resources (hydropower, nuclear, wind, solar, and geothermal). As an example: large, integrated E&P companies have already begun to focus on renewables (primarily wind, solar, and biofuels), as well as geothermal, as this energy diversity is necessary to simultaneously expand their business models and to address societal demand for energy options.

Panelists: John Ardill, ExxonMobil
 Bernadette Johnson, Enverus
 Greg Leveille, ConocoPhillips
 Don Paul, University of Southern California
 Vanessa Ryan, Chevron

1030–1100 Grand Lobby
Coffee Break

1100–1230 Metals Hall
Session 2: How PE Departments are Addressing the Energy Transition

Chairs: Raffie Hosein, University of the West Indies
 Jon Olson, University of Texas at Austin

This session will provide a global perspective of the impact of energy transition on Petroleum Engineering Programs and Curriculum. Short presentations will be delivered to highlight changes implemented by different schools.

- **The New Undergraduate Minor in Sustainable Energy**
 Hugh Daigle, University of Texas at Austin
- **Overview of PSU Petroleum and Natural Gas Engineering**
 Greg King, John Wang, Penn State University
- **Addressing the Energy Transition with a New GeoEnergy Engineering B.S. Degree**
 Runar Nygaard, University of Oklahoma
- **CCUS as an Elective**
 Christine Ehlig-Economides, University of Houston
- **How Does PE Fit Into Energy Resource Engineering in Time of Global Turmoil**
 Tadeusz Patzek, King Abdullah University of Science and Technology

1230–1330 Friedhoff Hall
Lunch

1330–1530 Metals Hall
Session 3: Preparing Petroleum Engineers for the Energy Transition

Chairs: Mashhad Fahes, University of Oklahoma
 Marshall Watson, Texas Tech University

Enrollment in petroleum engineering departments in the US has been on a downward trend since 2015. It is uncertain if high oil prices will reverse that trend. This session will start with a panel session, consisting of recent graduates, that will address attracting and preparing petroleum engineering students for the future and enabling them to be successful in the current economic and social environment. A job placement advisor will then provide their perspective on Gen Z, DEI and our ability to attract and retain students. The session will finish with attendees participating in a round table discussion.

Panelists: Lauren Borden, ConocoPhillips
 Bryce Fugate, University of Oklahoma
 Caitlin Latta, Colorado School of Mines
 Lee Looger, Oxy
 Katie Shahin, Oxy

- **Persistent Challenges, and Opportunities, in Recruiting Diverse Talent Into Petroleum Engineering**
 Teri Reed, University of Cincinnati

1530–1600 Grand Lobby
Coffee Break

All technical sessions will be held at Paraty ABC on the first floor, one level above the front desk.

1600–1700 Metals Hall
Session 3 continued

1700–1830 Grand Lobby
Networking Reception

1700–1830 Grand Lobby
Knowledge Sharing Posters

Chairs: Raffle Hosein, University of the West Indies
 Jon Olson, University of Texas at Austin

Knowledge Sharing Posters allow one-on-one interactions with presenters and opportunities to study a particular concept at an appropriate level of detail. Subject matter varies, but topics are consistent with the other technical sessions.

- **How to Increase Sustainability Awareness in Petroleum Engineering Curriculum**
 Linda Battalora, James Crompton, Will Fleckenstein, Colorado School of Mines
- **Developing the Petroleum Engineer of the Future: Data Science, Design, and Energy Transition**
 Anne Benneker, Roman Shor, University of Calgary
- **Petroleum Engineering Education – Evolution or Revolution?**
 Tom Blasingame, Texas A&M University
- **Accelerating the ET: Carbon Capture and CO2EOR and Storage – A “Game Changer” Technology**
 Ganesh Thakur, University of Houston

Tuesday, 9 August

0700–0800 Grand Lobby
Continental Breakfast

0800–0930 Metals Hall
Session 4: Petroleum Engineering Competencies

Chairs: Iraj Ershaghi, University of Southern California
 Linda Battalora, Colorado School of Mines

The emergence of the energy transition and automation/AI requires employers and employees to evaluate the skillset needed to tackle the challenges the industry is facing today and in the future. In this session, we discuss potential solutions from service industry professionals as to how enhanced competencies requiring digital transformation including data analytics, automation/AI, and other professional skills can facilitate successful outcomes in the office and the field.

- **Powering Tomorrow**
 Sonia Badilla, Schlumberger
- **Let's Meet the Smart Service Engineer of Tomorrow, Driving Innovation With Industry 4.0 Technologies**
 Bimal Venkatesh, Weatherford
- **What we Look for in an Engineer**
 Ben Poppel, Liberty Oilfield Services

0930–1000 Grand Lobby
Coffee Break

1000–1200 Metals Hall
Session 5: The Future for Petroleum Engineering Departments

Chairs: Jennifer Miskimins, Colorado School of Mines
 Runar Nygaard, University of Oklahoma

This session will consist of small breakout groups to discuss and summarize what has been learned during the workshop. Breakout groups will construct scenarios that could occur in the next 5-10 years in the areas of petroleum engineering, specifically in the areas of energy transition. Summary presentations will then be shared by each group in final report outs to address which actions petroleum departments can take to proactively meet these changes.

- **Petroleum Engineering Education – Opportunities and Challenges**
 Med Kamal, Chevron

1200–1330 Friedhoff Hall
Lunch

1330–1430 Metals Hall
Session 6: Career Professionals and Additional Skill Enhancement

Chairs: Robello Samuel, Halliburton
 Donald Paul, University of Southern California

This session will provide the service sector and operators' perspectives for the upcoming professionals on how to develop a career in petroleum industry and how to enhance their professional development skills in the process. This session will focus on professional development and strategies which can lead to new opportunities and career advancement as the industry transitions.

Robello Samuel, Halliburton
Donald Paul, University of Southern California
Marina Voskanian, California State Land Commission (retired)

1430–1500 Metals Hall
Closing Comments



General Information

Accessibility

Our events and functions are accessible to all attendees with wheelchairs. If you require special arrangements, please contact our staff at the registration desk.

Alcohol Policy

SPE recognizes the legitimate serving of alcoholic beverages in the process of conducting business and social activities. We also recognize that the use and consumption of alcohol carries with it the requirement for all attendees to consume those beverages responsibly.

Commercialism

In remaining consistent with workshop objectives and SPE guidelines, commercialism in presentations will not be permitted. Company logos should be used only to indicate the affiliation of the presenter(s).

Continuing Education Units

Attendees will receive 1.2 CEUs. One CEU equals 12 contact hours of participation. CEUs will be awarded through SPE Professional Development for participation and completion of an SPE workshop. A permanent record of a participant's involvement and awarding of CEUs will be maintained by SPE.

Documentation

Following the workshop, a URL containing released copies of the workshop presentations will be available to all attendees.

Electronic Devices

As a courtesy to the speakers and your fellow registrants, please turn off all electronic devices during presentations.

Name Badges

Please wear your badge at all times. It is a courtesy to your fellow registrants, speakers, and sponsors.

Photography and Recording Policy

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Workshop Format

Workshops maximize the exchange of ideas among attendees and presenters through brief technical presentations followed by extended Q&A periods. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices.

Many of the presentations are in the form of case studies, highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, no proceedings are published and members of the press are not invited to attend.

SPE Workshop Survey

Please take a moment and let us know your thoughts on this event! Use your mobile device:
<http://go.spe.org/22AGOL-JWAS>



Workshop Ideas

Have an idea for a new workshop or forum? Let us know about it by completing this [online form](#). Use your mobile device:

