The **Houston Sustainable Energy Trek** is a three-day immersive experience for undergraduate students at the University of Notre Dame to explore careers in sustainable energy. The trek is sponsored by the Meruelo Family Center for Career Development, ND Energy, and the participating companies.

During the trek, students will:

(1) Tour major global energy companies.
(2) Learn about domestic and international sustainable energy operations.
(3) Understand new initiatives to address global energy challenges and achieve net zero by 2050.
(4) Engage with energy professionals and Notre Dame alumni in the energy field.

Why Houston? *Houston leads the global energy transition with expertise to develop and apply technologies at utility and industrial scale and to create a cleaner, more efficient, and more sustainable, lower carbon world.*

ITINERARY

SUNDAY, MARCH 10 *(Casual attire)*

3:00 PM — Check-in at Embassy Suites by Hilton The Woodlands at Hughes Landing, 1855 Hughes Landing Boulevard, The Woodlands, TX 77380; 281-298-2900

6:30 PM — **Group Dinner** at Escalantes, 1900 Hughes Landing Boulevard #100, The Woodlands, 281-292-7800

MONDAY, MARCH 11 *(Business casual attire)*

8:30 AM — **Breakfast** - Embassy Suites

9:00 AM — Leave for downtown Houston via Sam's Limousine & Transportation, Inc.

10:00 AM — **Accenture Houston Innovation Hub**, 1301 Fannin St, Floor 18

- Company Overview and Net-Zero Initiative

Contact: Brian Richards, Managing Director | Email: brian.hale.richards@gmail.com | Phone: 1-312-339-2436 | Website: https://www.accenture.com

11:30 AM — Leave for Chevron via Sam's Limo

12:00 PM — **Chevron Corporation**, 1400 Smith Street

- Company Overview and Lunch
- Site Tour and Debrief

Contact: Mark Gess, Senior Commercial Advisor, Chevron Americas Upstream | Email: MarkGess@chevron.com | Phone: 1-832-428-8677 | Website: https://www.chevron.com/

2:00 PM — Leave for BP via Sam's Limousine

2:45 PM — **BP**, 201 Helios Way

2:45-3:00 PM **Student Check-In, Badges, Gather in Helios 1.210**

3:00-3:15 PM **Company Overview, Introductions, Light Refreshments**

- Juan Ramirez (Biogas)
- Miranda Howe (Wind)
- Holly Armstrong (Strategy)
- Kylie Minor (Physical/Financial Gas)

3:20-4:00 PM **Trading Simulation**
- Wade Kram (Learning & Development) and Holly Armstrong (Strategy)

4:00-4:20 PM **Remote Wind Center**
- Michael Morrone (ROC) and Matthew Johnson (ROC)

4:20-4:40 PM **2nd Floor Learning Center**
- Scott Eckerman (Compliance) and Holly Armstrong (Strategy)

4:40-5:00 PM **5th Floor Overlook of Trade Floor**
- Scott Eckerman (Compliance) and Holly Armstrong (Strategy)

Contact: Kylie Minor Fultz, Physical/Financial Gas | Email: Kylie.Minor@bp.com | Phone: 1-661-578-1108 | Website: https://www.bp.com/en_us/united-states/home/where-we-operate/texas.html

5:00 PM Leave for Medical Bridges via Sam's Limousine

5:30 PM **Medical Bridges**, 2706 Magnet Street
- Overview and Tour

Contact: Walter Ulrich | Email: wulrich@medicalbridges.org | Phone: 1-713-766-6552 | Website: https://www.medicalbridges.org/

6:30 PM Leave for NRG Stadium via Sam's Limousine

6:45PM Houston Rodeo

9:45 PM Leave for Embassy Suites via Sam's Limousine

TUESDAY, MARCH 12 *(Casual attire, long pants and closed-toe flat shoes required)*

7:00 AM **Breakfast** - Embassy Suites

7:30 AM Leave for ExxonMobil via Sam's Limousine

9:00 AM **ExxonMobil Main Building**, 5000 Bayway Drive, Baytown, TX

9:00-9:15 AM Check-in at Visitor Center
9:15-9:30 AM Baytown Area Overview
9:30-10:30 AM Baytown Refinery and Chemical Plant Driving Tour
10:30-11:15 AM Career Panel Discussion

Contact: Kelli Rollo, Public & Government Affairs Advisor | Email: kelli.a.rollo@exxonmobil.com | Phone: 1-281-507-8777 (Cell) and 1-254-545-3471 (Office) | Website: https://corporate.exxonmobil.com/locations/united-states/baytown-operations

11:15 PM Leave for **Lunch and Group Photo** at **Pipeline Grill**, 4601 Garth Rd. #100 Baytown, TX

12:30 PM Leave for Linde Clear Lake HyCO Facility via Sam's Limousine

1:30 PM **Linde Clear Lake HyCO Facility**, 9602 Bayport Blvd, Pasadena TX 77507
- Plant Overview and Tour

Contact: Ruth Oduca, Plant Manager | Email: ruth.oduca@linde.com | Phone: 1-832-584-1613 | Priscilla Lopez, Associate Director, Talent Acquisition | Email: Priscilla.Lopez@linde.com | Phone: 1-346-224-0724 (Cell) and 1-281-203-3211 (Office) | Website: https://www.linde.com/

4:00 PM Leave for Embassy Suites via Sam's Limousine

5:45 PM Leave for The Woodlands Country Club via Sam's Limousine

(Business casual attire)

6:00 PM **Alumni Reception and Dinner hosted by Jo Anne and Garry Nasti**
The Woodlands Country Club, The Palmer Golf Club Library, 100 Grand Fairway Drive

8:30 PM Leave for Embassy Suites via Sam's Limousine

9:00 PM (Free Time) **Market Street - The Woodlands** (https://shopatmarketstreet.com/)

WEDNESDAY, MARCH 13 *(Business casual attire)*

8:30 AM **Breakfast and Check-out** - Embassy Suites

9:30 AM **Sunnova Energy Corporation**, Embassy Suites lobby

- Summer Internships and Interviews

Contact: Leena Vuor, Talent Engagement Specialist | Email: leena.vuor@sunnova.com | Phone: 1-832-620-4962 (Cell) and 1-713-469-3553 Ext 13 (Office) | Website: https://www.sunnova.com

10:30 AM Leave for ExxonMobil Global via Sam's Limousine

10:45 AM **ExxonMobil Global Headquarters, 22777 Springwoods Village Parkway, The Woodlands**

- Global Overview
- Debrief and Lunch

Contact: Gregory Goodman, Senior Fractionation Engineer | Email: gregory.m.goodman@exxonmobil.com | Phone: 1-225-953-5615 (Cell) and 1-346-502-0208 (Office) | John Leblanc, Email: john.e.leblanc@exxonmobil.com | Website: https://corporate.exxonmobil.com/locations/united-states/houston-campus

12:30 PM Leave for IAH Airport

Students! Enjoy the Rest of Your Spring Break!!

When you get back to campus …

Please submit your trek evaluation form by **WEDNESDAY, MARCH 20**. **Thank you!**

Notre Dame Main Contacts

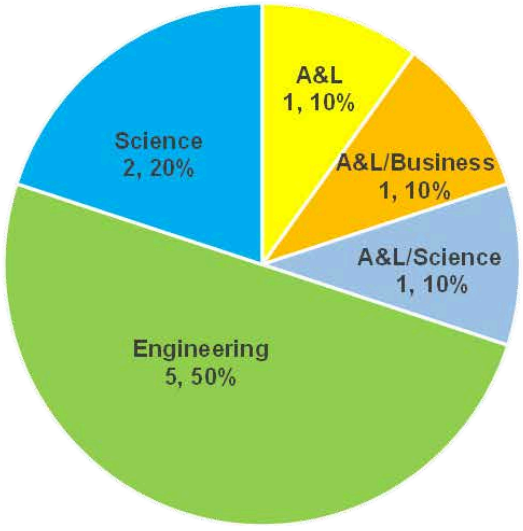
- **Jo Anne Nasti**, Regional Engagement Associate for Houston, Meruelo Family Center for Career Development | Email: jnasti@nd.edu | Phone: 1-832-585-2844 (Trek co-Coordinator)
- **Barbara Villarosa**, Business and Communications Program Director, ND Energy, Notre Dame Research | Email: villarosa.2@nd.edu | Phone: 1-574-360-3992 (Trek co-Coordinator)
- **Jon Camden**, Professor and Director of Undergraduate Studies, Chemistry and Biochemistry, College of Science | Email: jon.camden@nd.edu | Phone: 1-650-387-5159 (Trek Faculty co-Advisor)
- **Yazen Khasawneh**, Associate Teaching Professor, Civil and Environmental Engineering and Earth Sciences, College of Engineering | Email: ykhasawn@nd.edu | Phone: 1-248-495-0268 (Trek Faculty co-Advisor)
- **Steve Orsini**, Regional Development Director-Texas, Department of Development | Email: sorsini14@nd.edu | Phone: 1-214-274-4013

Notre Dame Students

Student	Email	Phone	Major/Minor	Class of
Abdulrahman Atassi	aatassi@nd.edu	1-248-825-9023	Chemical Engineering Minor in Energy Studies	2025
Matthew Bourke Doherty	mbourked@nd.edu	1-574-386-7114	Finance, Political Science	2026
David Fisher	dfisher3@nd.edu	1-515-490-2403	Chemical Engineering Minor in Energy Studies	2026
Jonathan Granda Acaro	jgrandaa@nd.edu	1-810-459-1101	Computer Science	2025
Faith Groody	fgroody@nd.edu	1-570-933-2042	Environmental Science Minors in Earth Sciences and Chemistry	2026
Josie Humbert	jhumber4@nd.edu	1-708-973-2186	Environmental Science, Economics Minor in Data Science	2026
Bjorn Mauritsen	bmaurits@nd.edu	1-575-420-9066	Political Science Minor in Business Economics	2026
Sara Murray	smurra23@nd.edu	1-310-648-4964	Chemistry Computing Minor in Energy Studies	2025
Joanna Nguyen-Tran	jnguyent@nd.edu	1-346-493-0594	Environmental Engineering Minor in Energy Studies	2025
Samantha Sebastian	ssebast2@nd.edu	1-808-800-7073	Electrical Engineering Minor in Energy Studies	2026

4 Colleges
9 Different Majors (2 Dual)

Students by College



Majors (2 Dual)
2 Chemical Engineering
1 Chemistry Computing
1 Computer Science
1 Economics
1 Electrical Engineering
1 Environmental Engineering
2 Environmental Science
1 Finance
2 Political Science

Houston Sustainable Energy Trek
Young Alumni Panel Discussion

March 12, 2024 | 6:00-8:30 p.m.
The Woodlands Country Club

Moderator:

Kylie Minor Fultz '19
Economics

Northeast Mid-Marketer, **BP**

Panelists:

Ryan Dunbar '13
Civil Engineering

Project Manager, **Chevron**

Kaileigh Perrier '22
Chemical Engineering

Chemical Engineer, **ExxonMobil**

Gage Pickford '23
Mechanical Engineering

Project Execution Engineer, **ExxonMobil**

Monica Ochoa Porter '18
Aerospace Engineering

CST-100 Starliner Human Factors Engineer, **Boeing**

Clare Posway '18
Chemical Engineering

Operations Engineer, **Chevron Phillips Chemical Company**

Phillip Posway '15
Chemical Engineering

Senior Process Engineer, **NET Power**

Monday, March 11, 2024

Accenture

Joel Trahan (see LinkedIn) shared his personal career path and experiences with students while providing a tour and explaining the Accenture mission as follows:

1. Abstract Mural depicts their Steps to Innovation
   - TCRI - Talent (diverse teams), Collisions (butting heads, challenging others), Resources (funding), Impact (who and why are we impacting)
   - All of the above must be present or it's obsolete.
   - Fish bowl is to think about the intangible
   - Armadillo is not very attractive
   - Astronaut, be the first to innovate!
2. Orthodoxies - limitations to thinking, blocks creating thinking, use room to write down the orthodoxies and then use the yoga blocks to kick them out of the way.
3. Visual depiction to innovation and net zero - Innovation, Sustainability, Industry, Technology - There's no finish line for innovation.
4. Project room - sample project is to use water from oil for agriculture - 1 barrel of oil = 10 barrels of water. Employees have engineering backgrounds that can apply to all areas. Best advice given by professor is "Different toolbox but same type of problem solving process"
5. Emergent Tunnel - immersed in what's possible (video depiction of goals, visually effective and motivating).

Chevron

Hosted by Mark Gess '86, Commercial Advisor, Americas Upstream; other representatives who shared their career paths and experiences with students were Brian Cooms, General Manager, Global Customer Experience; Chicovia Scott, Lourdes Long, Commercial Business Manager, Mid-Africa; Michelle Natarajan, Commercial Manager, Americas Upstream; Kyle Devlin, Land Representative, Americas Upstream; and Ryan Dunbar, Project Engineering Operations: Americas Upstream

Topics covered included the following:

- The Chevron Way - affordable, reliable, and diverse ever-cleaner energy
- Balanced Energy Framework: economic prosperity - affordable; energy security - reliable; environmental protection - ever-cleaner - This is what Chevron believes in.
- Diverse - different forms of energy - crude vs. gas portfolio; oil 80% / gas 20% - does not include investment in sustainability.
- Energy Transition - lower carbon energy (leverage our strengths) e.g., renewable natural gas and carbon capture.
- Chevron is the second largest oil and gas company; 38,200 employees; 3.0M barrels per day; 1.8M barrels refinery; $24.7B in 2023 earnings.
- Upstream - explore, produce; Midstream - supplies, transport; Downstream - refine, market
- Chevron-Phillips is a petrochemical partnership.
- This leads to higher returns (assets) and lower carbon - carbon intensity, methane leader, renewable fuels, carbon capture (currently, sequestration), hydrogen business.
- Energy Transition - compressed natural gas (CNG), convert diesel to CNG, renewables have the greatest growth in 20 years, all forms of energy is needed. Economics, policy, and technology influence pace. By 2028, Chevron will grow lower carbon businesses: renewable fuels and products; hydrogen for transportation; carbon capture (sequestration), utilization, and storage; and offsets and emerging lower carbon opportunities.
- Investing $2B in carbon reduction projects and $8B in low carbon investments. Chevron expects to triple their lower carbon capital versus prior guidance over $10B between now and 2028.
- Lower carbon intensity of Chevron's operations, targeting 35% in carbon reductions. The aim by 2050 is a net zero aspiration for Upstream Scope 1 & Scope 2 emissions.

BP

Kylie Minor Fultz '19 hosted the discussion that included a trading simulation and tour of their expansive facility, which included the following highlights:

- Reimagining Energy - IOC to IEC (International Oil Company to International Energy Company).
- The trilemma - secure, affordable, reliable
- By 2028, resilient (hydrocarbons), convenience and mobility, low carbon energy (hydrogen, renewables, and power).
- Roadmap to Clean Energy = Oil - Gas - Power.
- Aim is by 2050 to be net zero to improve people's lives and care for our planet (solar, wind, hydro, nuclear). See BP wind farm near Purdue.
- 69,500 employees worldwide.
- Retail - BP gas stations and EV chargers
- Trading - Flow insurance; shipping - Liquefied Natural Gas (LNG).
- ISO - Independent Systems Operator.
- Renewable Energy Market - Trade and Credits; positions include originators (trading), marketing/originators (customer deals); engineers - mechanical and EE for wind sector and chemical maybe, civil for construction.

Post-Trek Information from BP: BP released its annual sustainability report, showing its annual progress against its 20 sustainability aims. A few highlights follow:

- 41% reduction in scope 1&2 emissions
- 13% reduction in scope 3 emissions
- 3% reduction in net zero carbon intensity of the energy products we sell
- 0.05% reduction in methane intensity
- $3.8 billion spent on the energy transition into non-oil & gas businesses
- 58.3 GW of clean energy projects in progress
- 29% reduction in freshwater usage

Because some students expressed interest in solar power, BP provided the following link to its solar business and separate careers site: Lightsource bp US.

Medical Bridges

Walter Ulrich, President and CEO, and his two staff members provided a tour of their facility, explaining their mission and demonstrating how to be a "power force for good in the world":

- There are 7 certified Medical Bridges in the U.S.
- There are 3 employees in Houston (CEO, Marketing, Operations) who solely depend on volunteers and donations, including volunteer summer internships for students.
- Students at Texas A & M developed blueprints to create medical offices out of the crates that are used to ship supplies overseas. Students will share the plans with anyone who is interested.
- Facility includes a reception area, individual offices, storage room for medical supplies, a large warehouse for large supplies and equipment, a testing area for equipment, and a shipping area.
- Area hospitals donate overstocked supplies with expiration dates of 18 months or more and outdated equipment that is still operable; Medical Bridges picks up donated items.

March 12, 2024

ExxonMobil, Baytown

Hosted by Kelli Rollo, students learned about ExxonMobil's efforts to reduce carbon emissions and participated in a driving tour of their expansive facilities. They later engaged with young alums during a panel discussion about their experiences working in the energy field and at ExxonMobil.

- 3,500 employees in Baytown; 600K barrels/day; 3,400 acres (3x the size of Downtown Houston), integrated operations; 9B pounds of petrochemicals; olefin plant (saw from highway); plastics plant; T&E complex.
- ExxonMobil CEO, Darren Woods, leadership podcast to learn more about their energy transition.

- Energy Transition - lower carbon, blue hydrogen, carbon sequestration, and product storage changed from tanks to vessels to reduce carbon emissions; goal is realistic solutions.

Linde Clear Lake HyCO Facility

Summer (production supervisor) and Samantha (senior plant engineer) provided an overview of Linde, the positions within the organization, and a walking tour of the facility.

- Facility is ATR – Auto Thermal Reformer
- 15 employees on site; BASF Amine System for CO2 removal; positions: environmental engineers, 4% growth, $85K-$120K; plant engineer, 5-10% growth, $100K; production superintendent, $120K+; operations director (over 11 facilities), $180K+; process control engineer.
- Monthly Efficiency Reviews
- Engineering, Commissioning, Operations
- Building a new plant in Beaumont (Linde Engineering); plants are built for specific purposes.
- Some projects include carbon monoxide as a feedstock to a client.

March 13, 2024

Sunnova Energy

Leena Vuor provided an overview of Sunnova Energy and conducted brief interviews with students who were interested in summer internship opportunities.

- Renewable Energy Summer Internship Program - 10 weeks, paid.
- International, growing market; founded in 2012; values are Service, Synergy, and Sustainability; services are solar, battery storage, home solar protection, financing, EV chargers, and standby generators.

ExxonMobil Global Headquarters

Hosted by Greg Goodman, students were provided an overview of their research laboratory, touring the laboratory facility and viewing samples from a drill site.

- 6,000 employees; four quads with multiple buildings on each quad: N (Nature), S (Science), E (Energy), W (Wellness).
- Research Laboratory Presentation and Tour
- Friendswood Test Facility (243 acres) - corrosion, hydrocarbon, toxic gasses at bench-scale.
- Laboratory Operations Team: Experiment - Data - Engineering (and Geosciences) Teams
- 5 main lab locations globally - Upstream, Low Carbon, Downstream
- Teams and Capabilities: Reservoir Characterization (rocks, fluid, PVT-pressure, volume, temperature); Wells and Materials (drilling, mechanical); Friendswood Operations (corrosion, flow, well performance); Lithium Extraction Pilot (Arkansas acreage with depleted oil and extract water for third party separations - recycling operations); Research Operations Design and Logistics.
- Positions: Chemists, geoscientists, microbiologists, biologists with education level Ph.D.; lab professionals have bachelor degrees in science and all engineering majors.
- 1 kips = 1000 pounds; laboratory capabilities can go up to 10,000 kips; also displayed sample size rocks and liquids. Picture outside of the Energy Cube.