

Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students



AAPG

Visiting Geoscientist Program

June, 2015

Presentation Outline

- **Industry Outlook (Section 1)**
 - Where is the market going in the near and long term?
 - What are some of the causes of the current contraction?
- **Careers / Jobs in the Geosciences (Section 2)**
 - Geoscientist across the economy and in Government, Academia, and Industry
 - Broaden your experience!
- **How to Get Started (Section 3)**
 - Personal Stories
 - Story 1
 - Story 2
 - Interviewing
 - Placement
 - Networking
 - Young Professionals (YPs)
- **Q&A Preparation Material and Additional Content**

Note to VG Presenters

- AGI asks AAPG VGs that utilize AGI sourced slides take a 1-hour free on-line workshop geared towards directing student discussions on career development in the geosciences.
- It explains how best to talk about the AGI career wheel, interviewing techniques, and what amount of education best fits with the students long-term career goals. If further discussing the current downturn and avenues for career development.



Preparing our Workforce (POW)

<http://www.americangeosciences.org/workforce>

<http://www.americangeosciences.org/workforce/pow-careers-discussion-course-registration>

Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students

Section 1

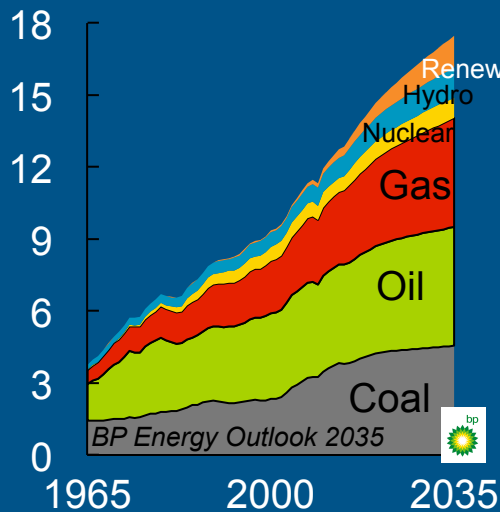
Industry Outlook



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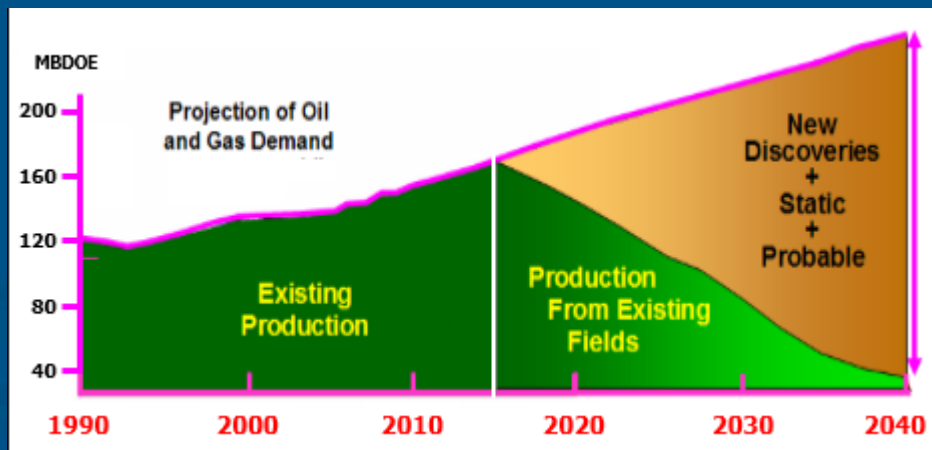
Visiting Geoscientist Program

Challenge for the Upstream – today and beyond



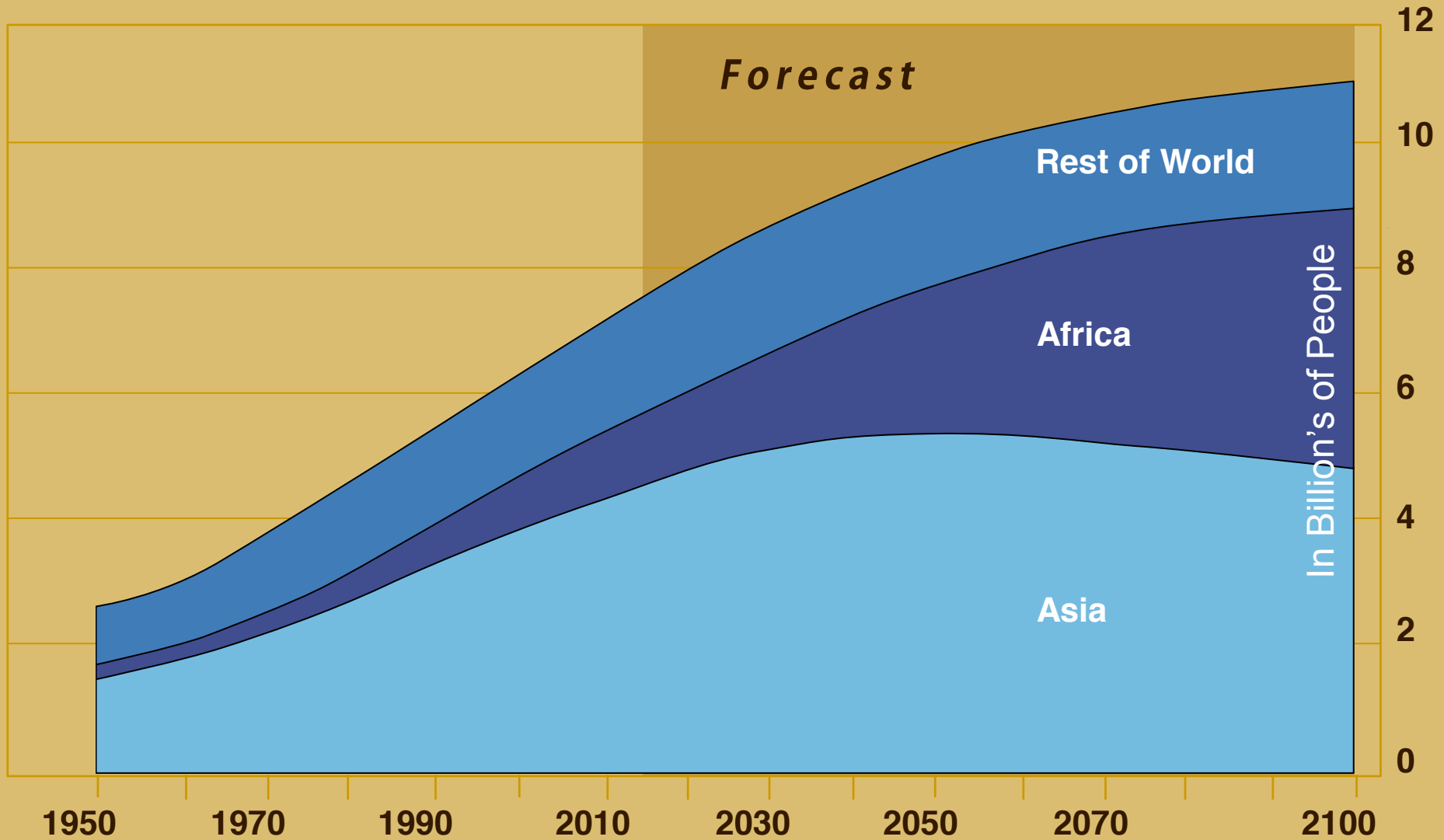
Worldwide demand for energy will increase steadily out to 2035 and beyond

Projected demand for oil and gas in 2035 is 45% more than it is in 2015

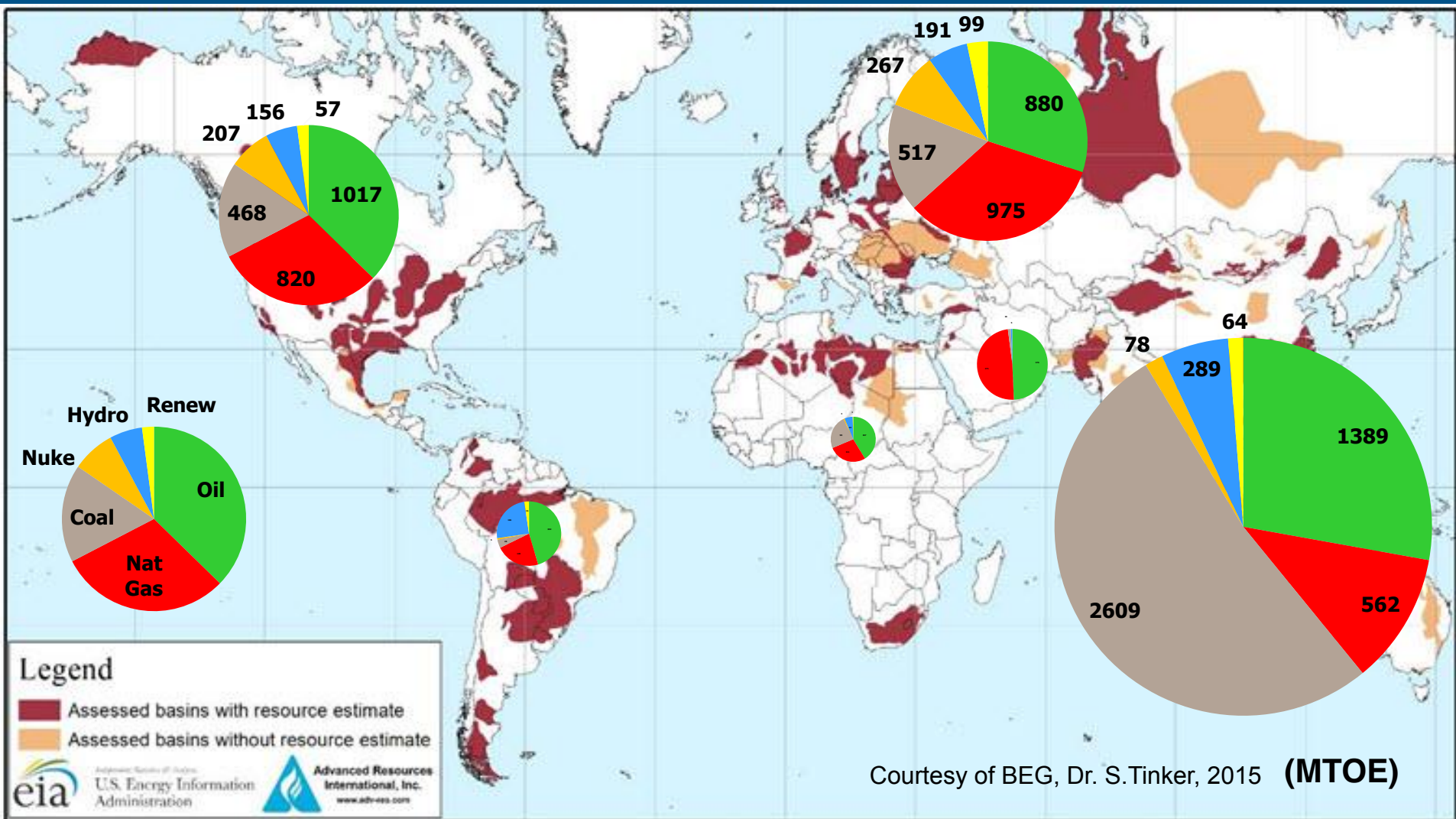


There is a huge GAP between projected production from existing fields and what needs to be produced through 2040 to meet the demand

Global Population Growth



Source of Energy Demand

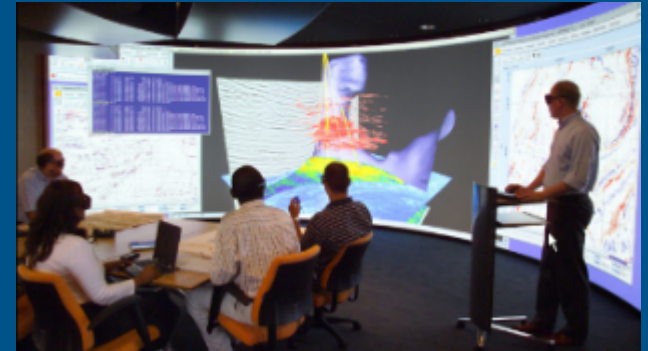


Courtesy of BEG, Dr. S.Tinker, 2015 (MTOE)

Source: United States basins from U.S. Energy Information Administration and United States Geological Survey; other basins from ARI based on data from various published studies.

What We Need

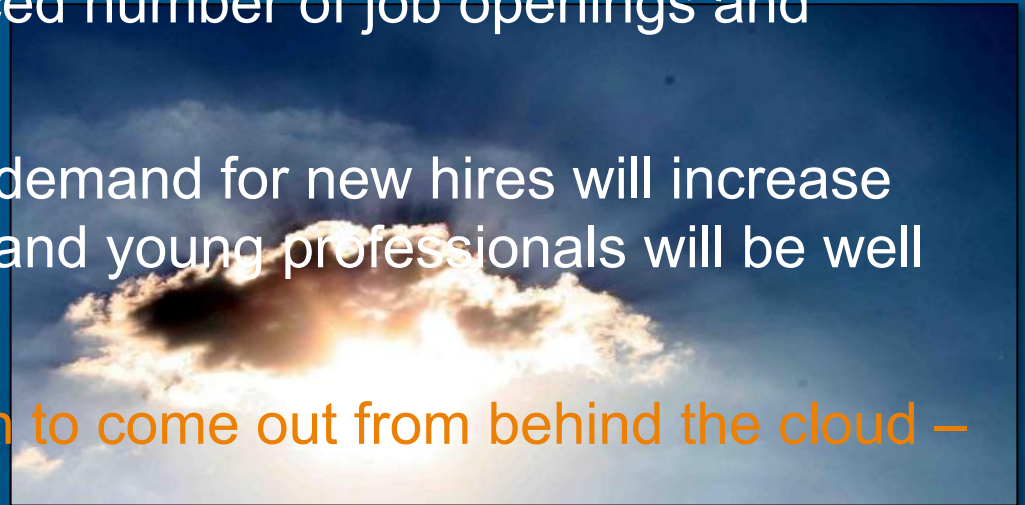
- We need to drill 'good' wells, ones that have low risk and maximize the return on our investments
- Since wells can be very expensive, some cost more than \$200 million, we must position each well with care
- We need as accurate an understanding of the subsurface as possible so we can:
 - Maximize oil & gas recovery from known fields
 - Move probable & static assets to proven reserves
 - Discover new reserves beneath & adjacent to known fields
 - Find and produce oil & gas in new areas



Conclusion: The energy industry needs new geoscientists with the talent and drive to find, develop and produce the energy that people will need.

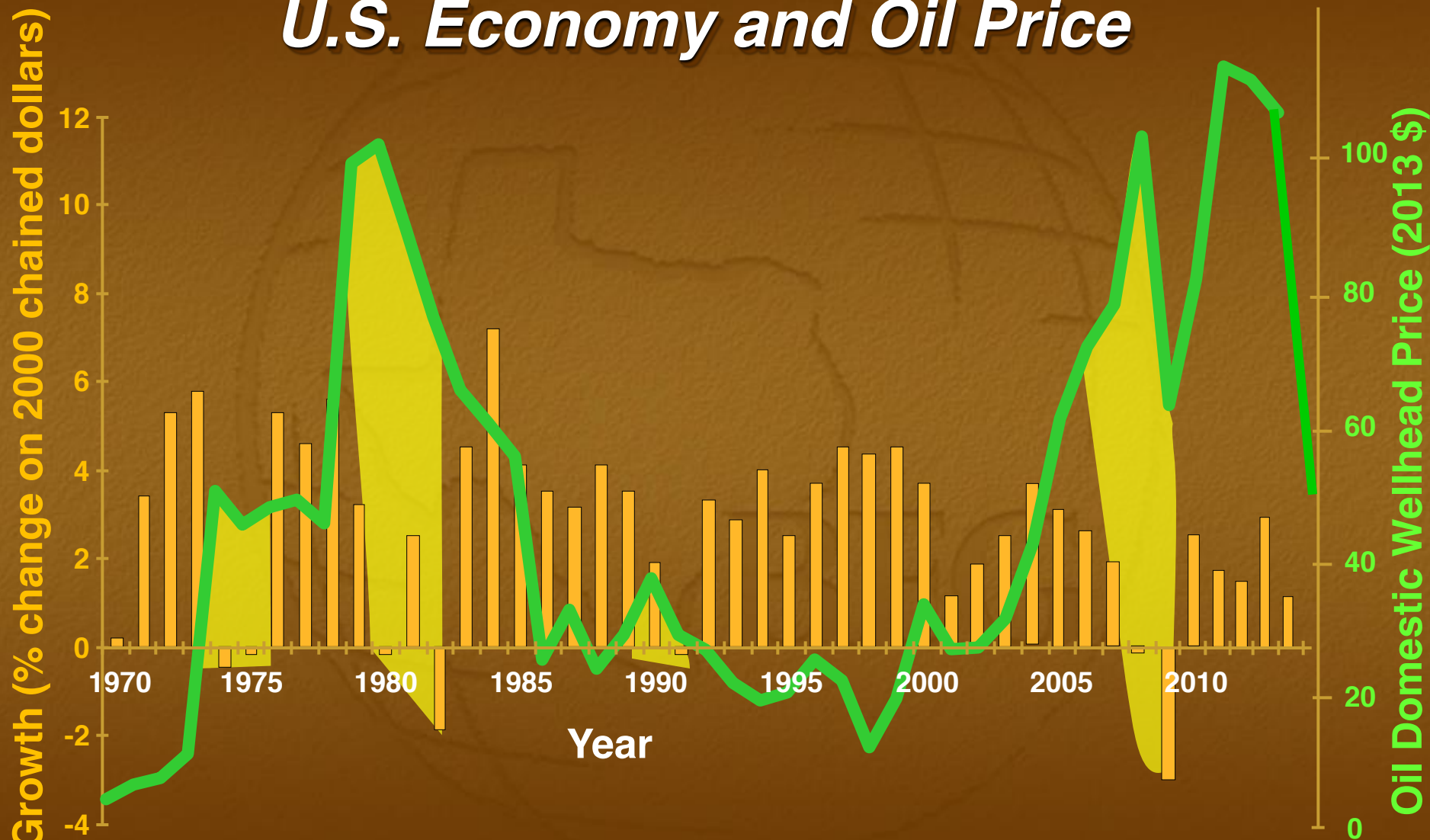
Oil & Gas Prices

- The energy industry goes through cycles (of about 7 – 10 years)
- These cycles are dictated by oil and gas prices and, while unfortunate, a byproduct of maintaining a balance of supply and demand
- Right now prices are low and companies are tightening belts
- 2015/2016 will see a reduced number of job openings and internships
- When prices rebound, the demand for new hires will increase greatly and students and young professionals will be well positioned
- **We have to wait for the sun to come out from behind the cloud –
*AND IT WILL!!***



The Economy and Energy

U.S. Economy and Oil Price



Data: BP Statistical Analysis; US Department of Commerce

1970-1983 Arabian Light

1984 Brent dated

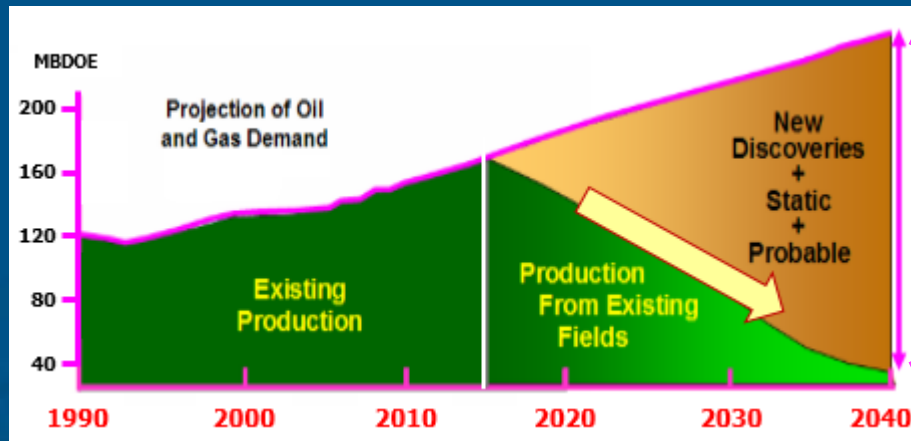
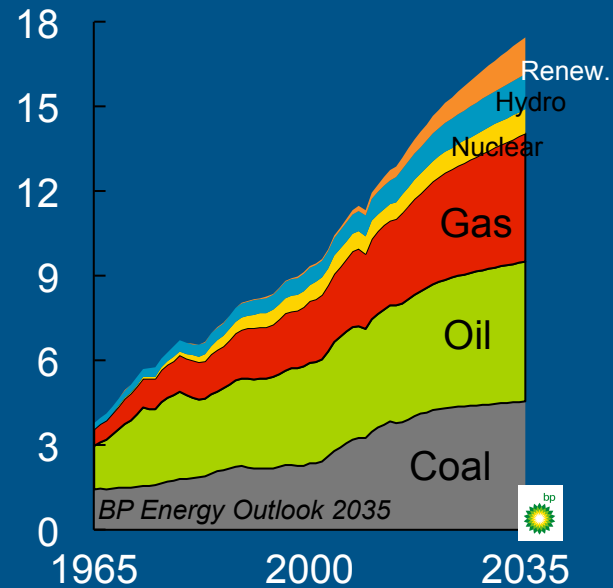
Three BIG Positive Factors

1. Energy Demands
2. Technology Needs
3. Industry Demographics



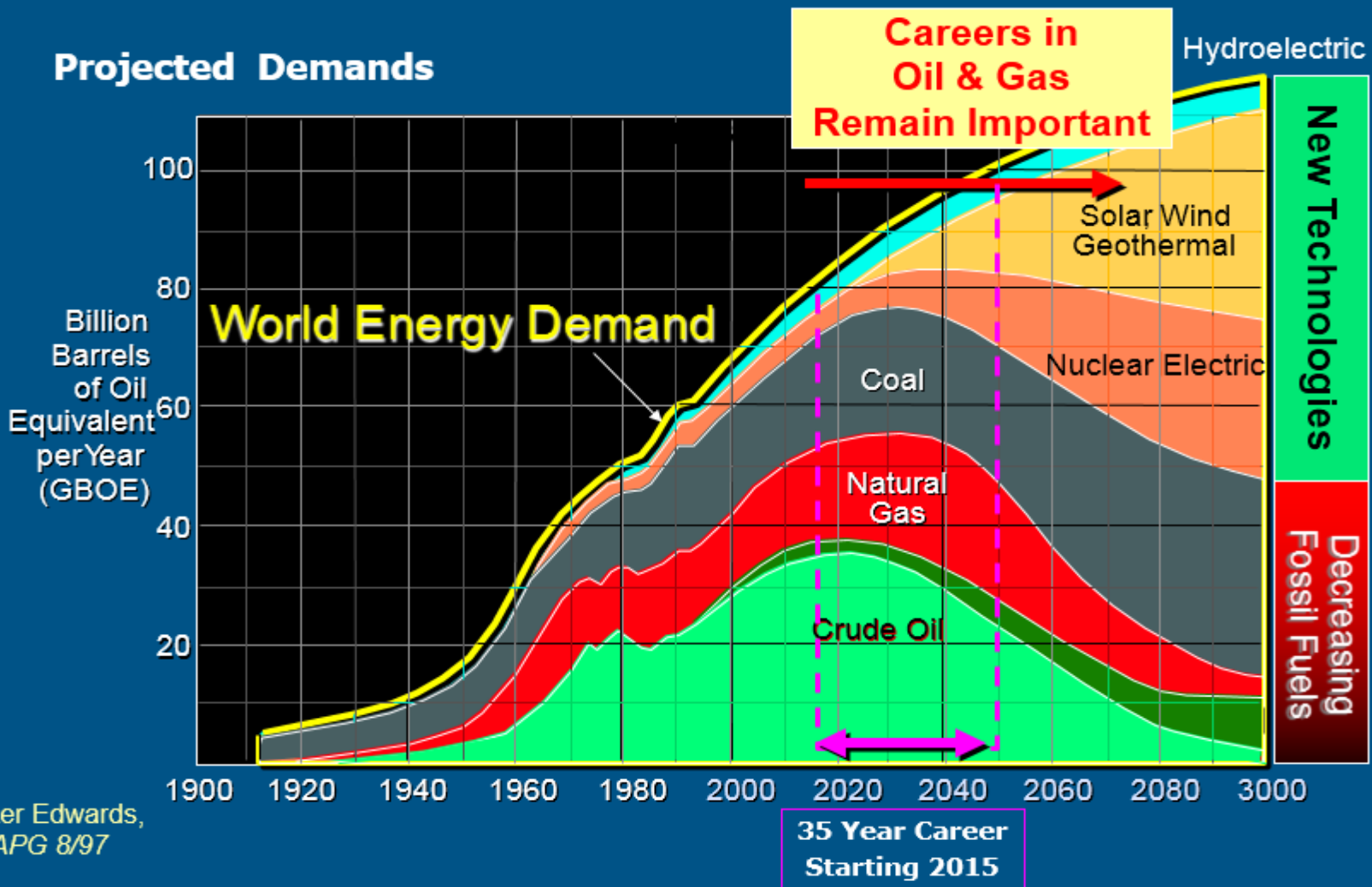
Demand UP, Production less certain

As You Have Seen...



Geoscientists
are Needed
to Fill this
GAP?

Sources of Energy Forecast

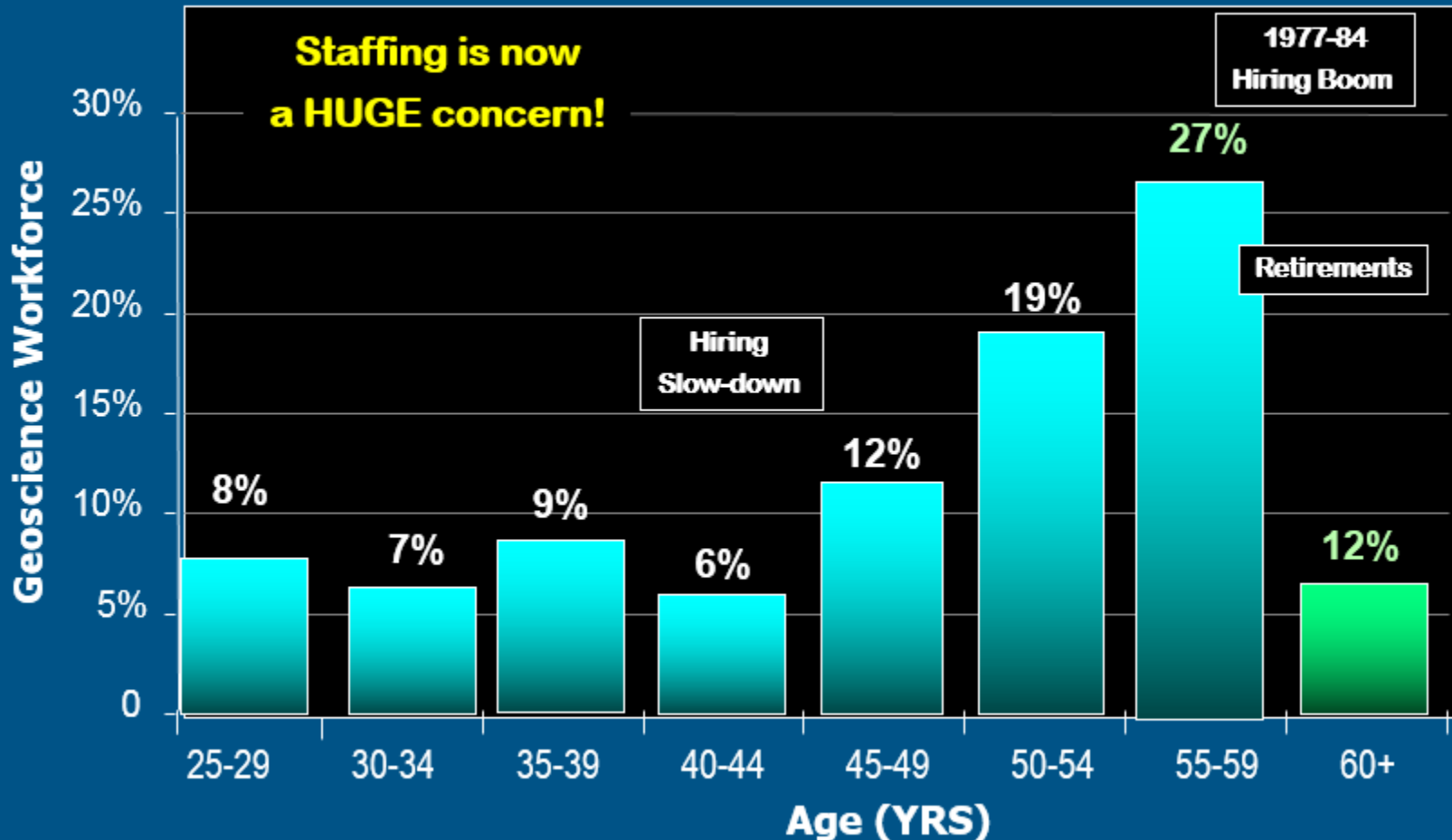


Technology Needs

- To meet energy demands, we can't count on simply making 'giant new discoveries'
- In addition to making new discoveries, we need to get more out of what we already have found:
 - New life in old fields
 - Make 'uneconomic' reserves economic
- Technology, and the people to develop and apply it, will be the key

Industry Demographics

Age Brackets for a Typical Major Oil Company (2013)



Career Forecasts – by 2021

262,627 geoscience jobs today

~130,000 geoscientists expected to **retire** by 2021

72,000 geoscience job **growth** by 2021 (BLS)

15,000 total new graduates (MS or PhD)

OR

45,000 total new graduates if also hiring BS/BA

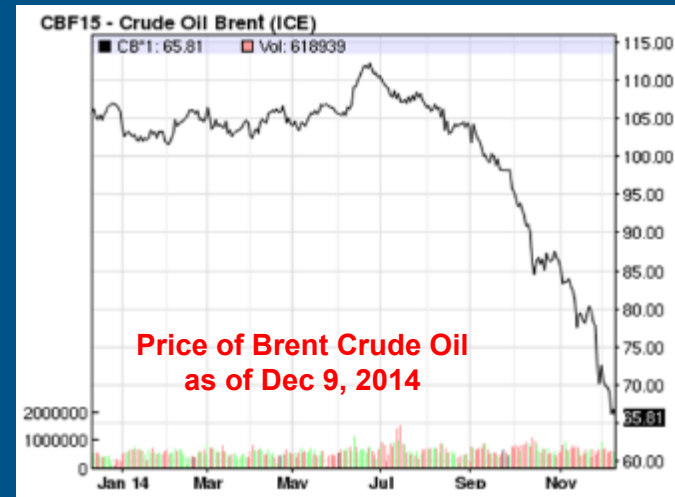


Net deficit of over **150,000**
geoscientists by 2021

Two Major Concerns



- Recent drop in the price of oil (down about 50%)

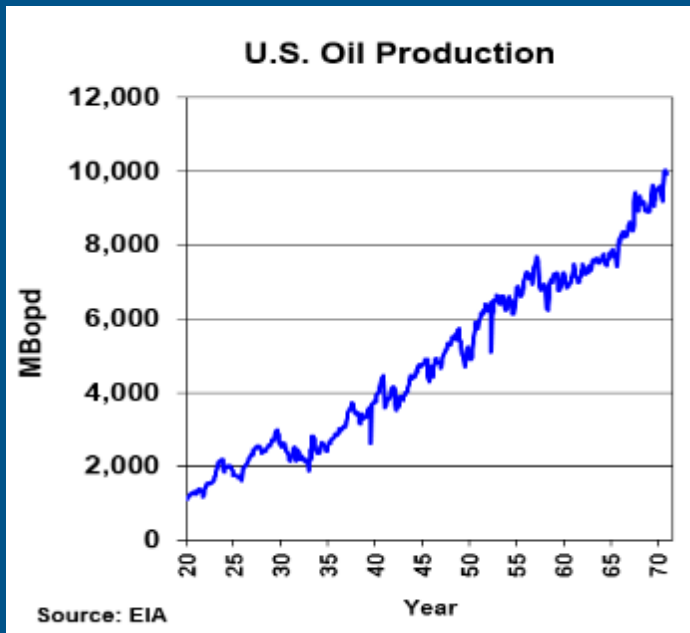


- Number of Geoscience Majors is high

a recent AAPG/SEG Student Expo



Some History: 1946 to 1970



- US demand was **less** than our production capacity – the spigots were **not** open 100%
- We did not require imported oil to meet our needs
- Oil prices were quite stable



More Recent History: 1970 - 2014

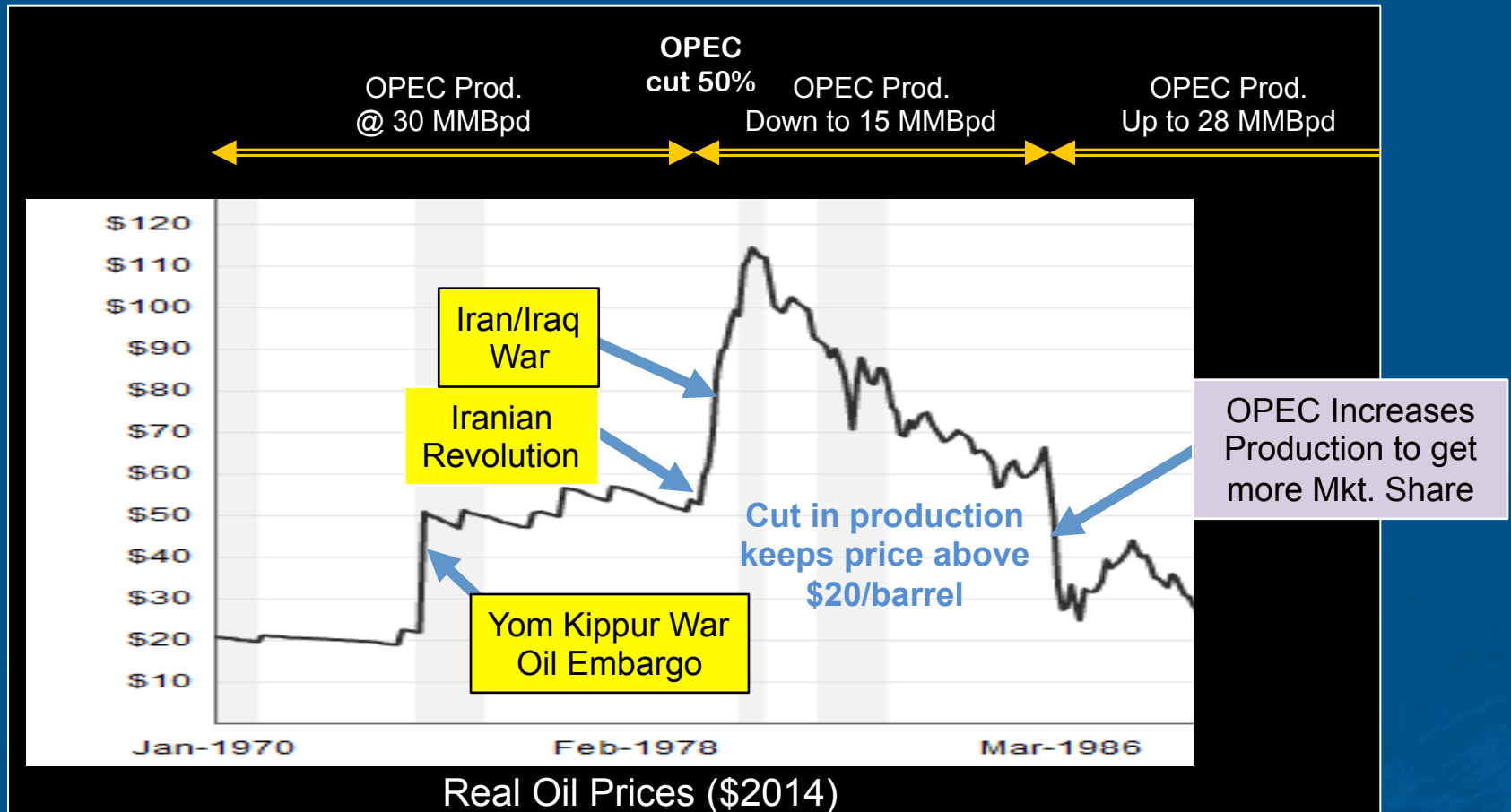
- US demand **exceed** US production capacity – the spigots **were** opened 100%
- Henceforth we **required** imported oil to meet our energy needs
- World economic and political events drive price extremes
 1. Concerns over supply disruptions
 2. Production quotas of suppliers
 3. World financial instabilities
 4. Production from Unconventionals



**Late 1973
Oil Embargo led
to long gas lines**

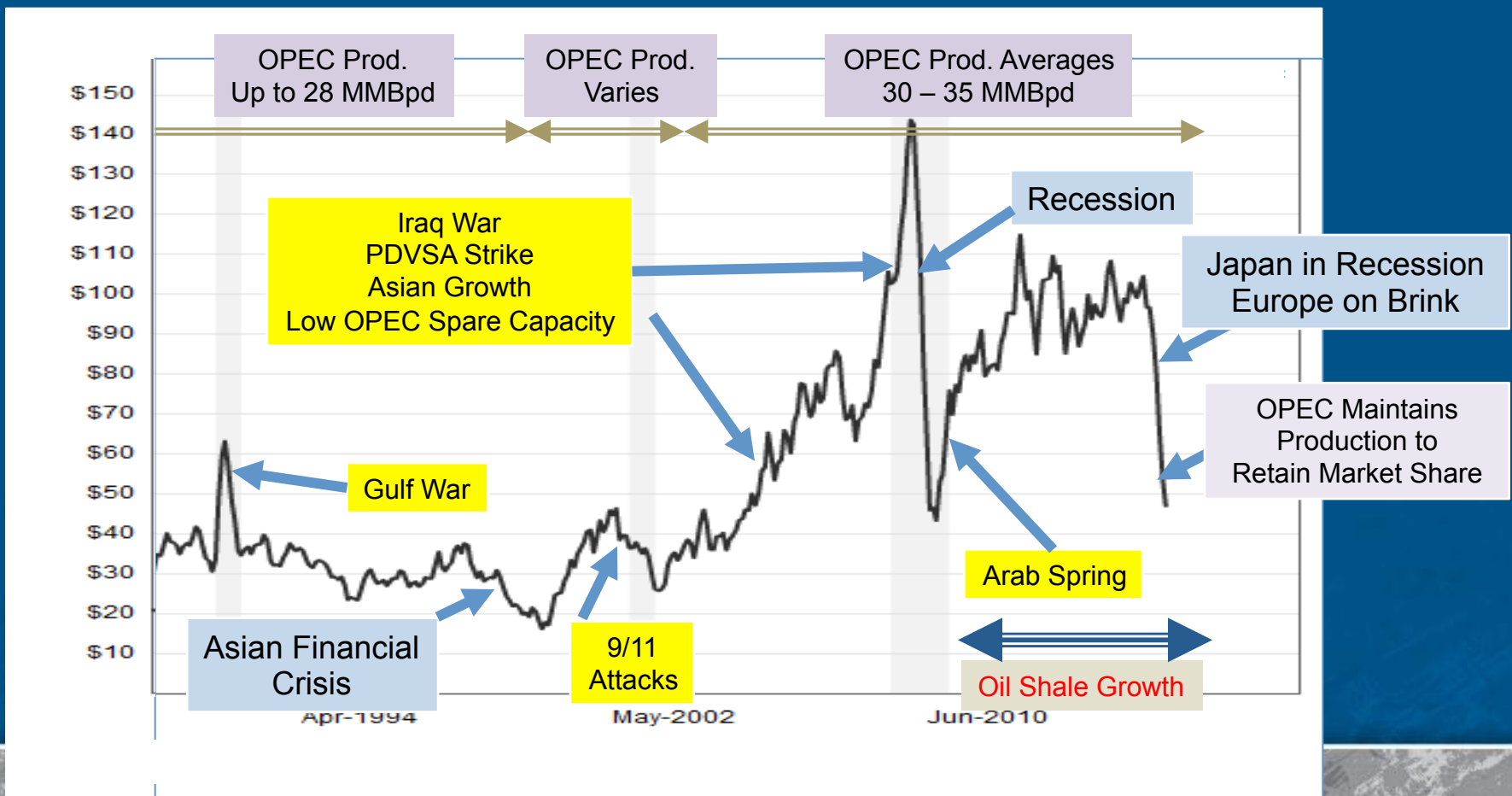
Oil Prices: 1970 - 1988

1. Concerns over supply disruptions
2. OPEC Production quotes of suppliers



Oil Prices: 1988 - 2014

1. Concerns over supply disruptions
2. Production quotes of suppliers
3. World financial instabilities
4. Production - Unconventionals



Current Price Collapse

- Significant production from unconventionals has added to our supply
- OPEC has not reduced production (as they traditionally would have)
- We have a slight over-supply (more produced in a day than consumed – exasperated by sluggish global economy)
- This has caused oil prices to drop ~50%
- Wells, especially in unconventional fields, are being shut in, which will lower daily production and eliminate over-supply
- With time, supply and demand will come back into balance and prices will stabilize at \$? /barrel

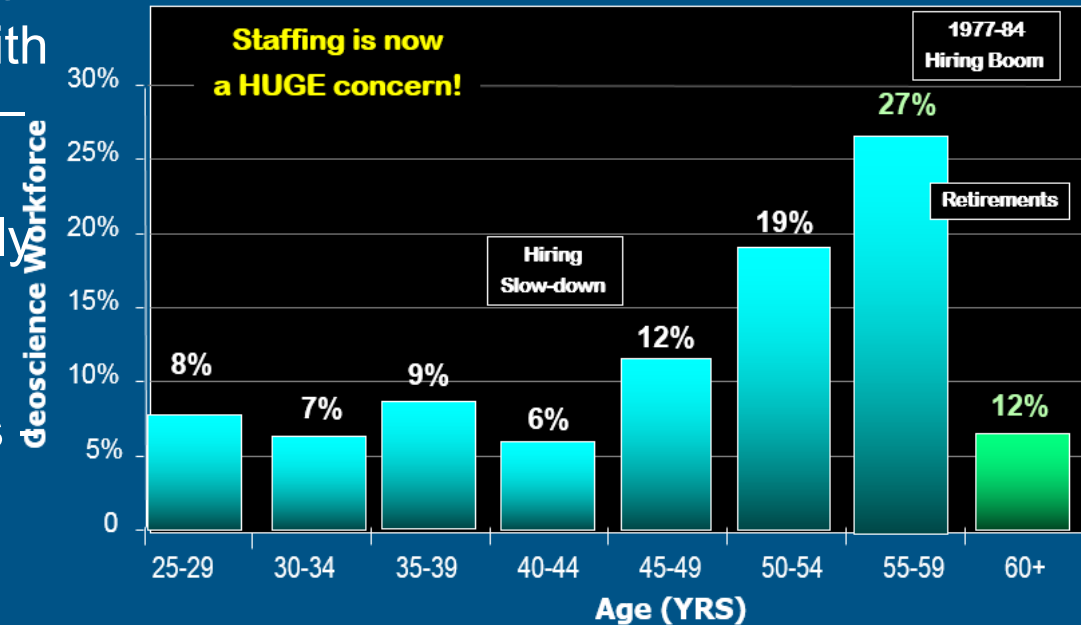
Now – The bright side!

- Hiring will be hampered over the short term, but those new to the workforce are the ones able to capitalize on the next upturn!
- While many areas of the industry are affected (especially service and exploration companies), the geoscience community is far more diverse than in previous downturns, and many opportunities are available in government, academia, and other areas of the hydrocarbon pipeline.
- And, as upstream companies are cutting because of oversupply, downstream companies are profiting on the growing hi-demand of products – US motorists aren't slowing down!
- Demographic trends continue to work in the favor of early career professional's over the long run.
- Global, and increasingly, American energy production and demand remains positive and geologist will be needed to continue that trend.

Now – The bright side!

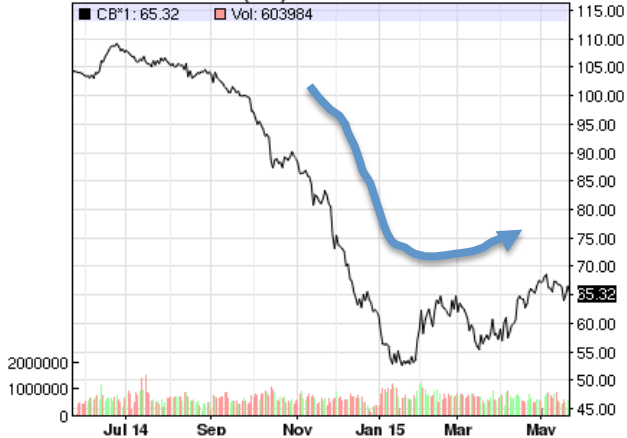
The largest percentages of those released are those over 55 or with less than 5 years of experience – with many those over 55 not returning when hiring returns only exasperating the problem of the lack of talent to replace the retiring late-career professionals

Age Brackets for a Typical Major Oil Company (2013)



Oil prices have stabilized and even appear to have begun to rebound slightly, students that can make it through the next year/18 months are positioned nicely for the next recovery!

CBN15 - Crude Oil Brent (ICE)



Energy Outlook – BP Summary to 2035



Continuous change is the norm for energy markets

- Changing energy mix

- gas fastest growing fossil fuel, coal the slowest
- continued rapid growth in renewables



- Changing energy trade patterns

- increasingly flowing from West to East

- Changing the carbon emissions path?

- no silver bullet, need action on many fronts
- let the market pick the winners

Continuous change is the norm in the energy industry



- Today's turbulence is a return to business-as-usual.
- The energy mix changes.
- The balance of demand shifts.
- New sources of energy emerge, such as shale gas, tight oil, ultra-deep water oil or renewables.
- Economies expand and contract.
- Energy production and consumption are affected by disruptions, from wars to extreme weather.
- New policies are created to address climate change or bolster energy security.

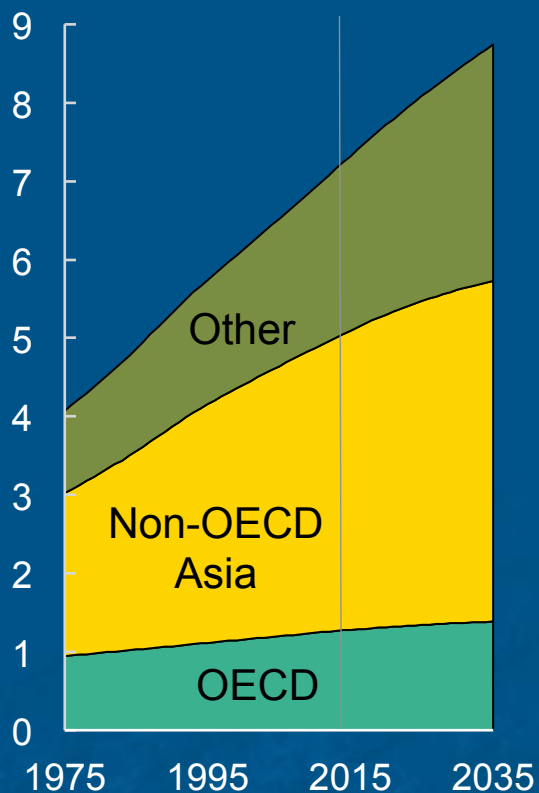
Global population and increases in income per person underpin growing energy demand



Population

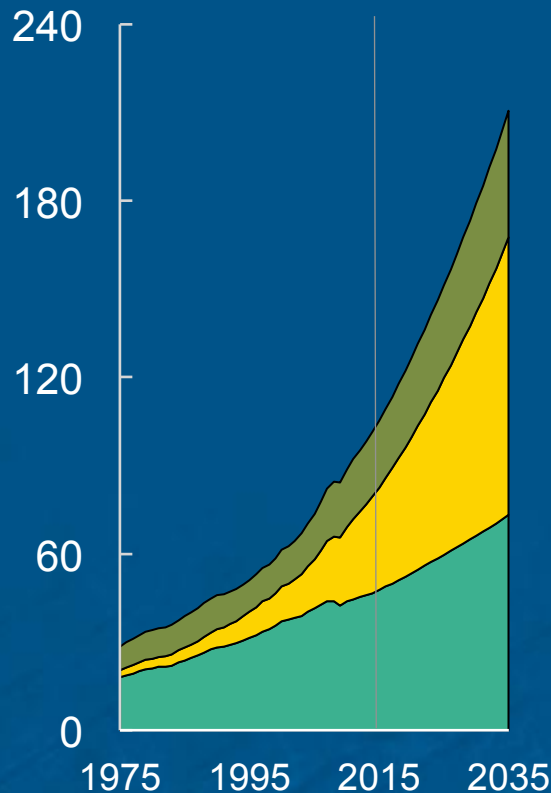
OECD - Organization of Economic Co-Operation and Development Countries

Billion



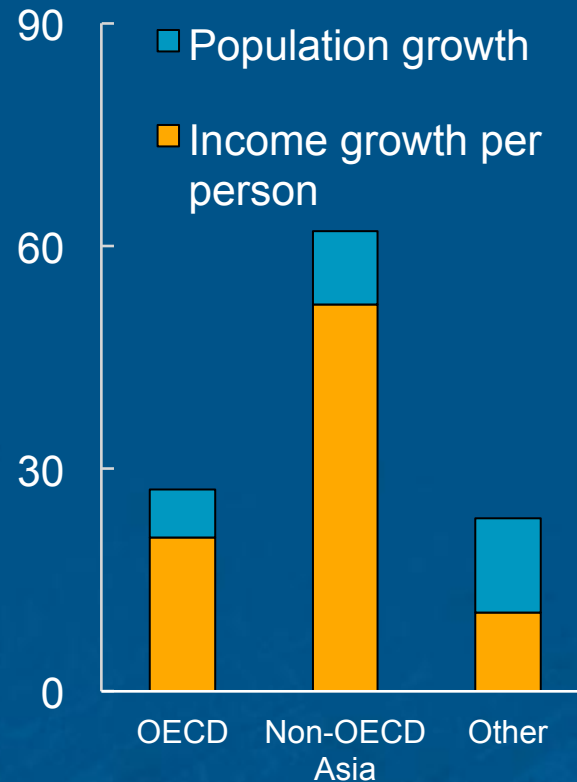
GDP

Trillion, \$2011 PPP



Contribution to GDP growth 2013-35

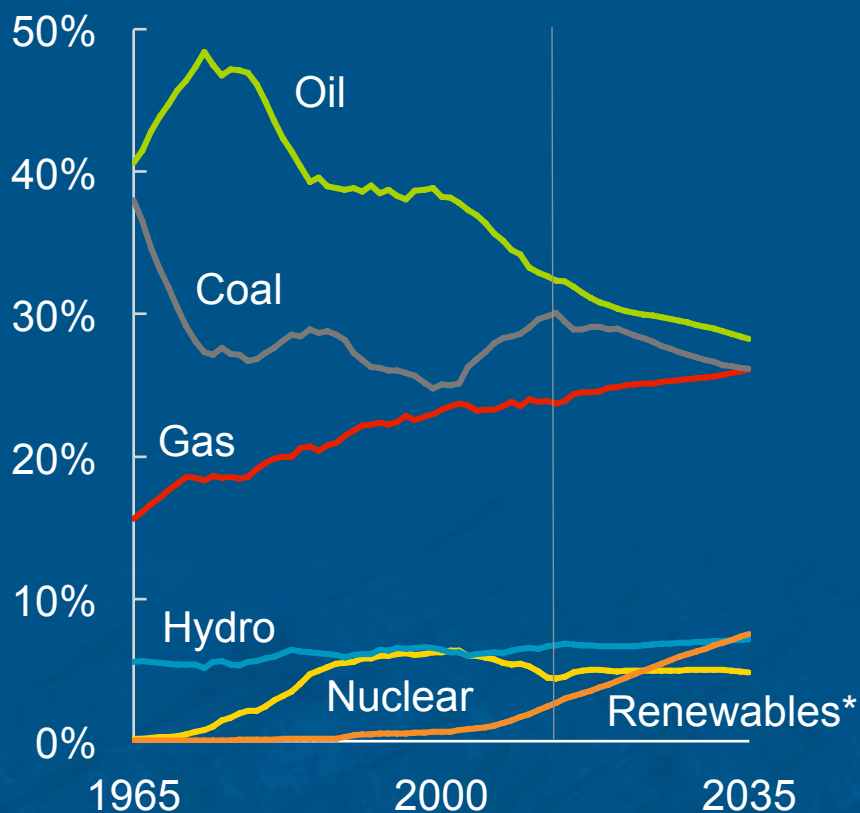
Trillion, \$2011 PPP



Fossil fuels support most of the world's energy even as it shifts towards lower carbon fuels



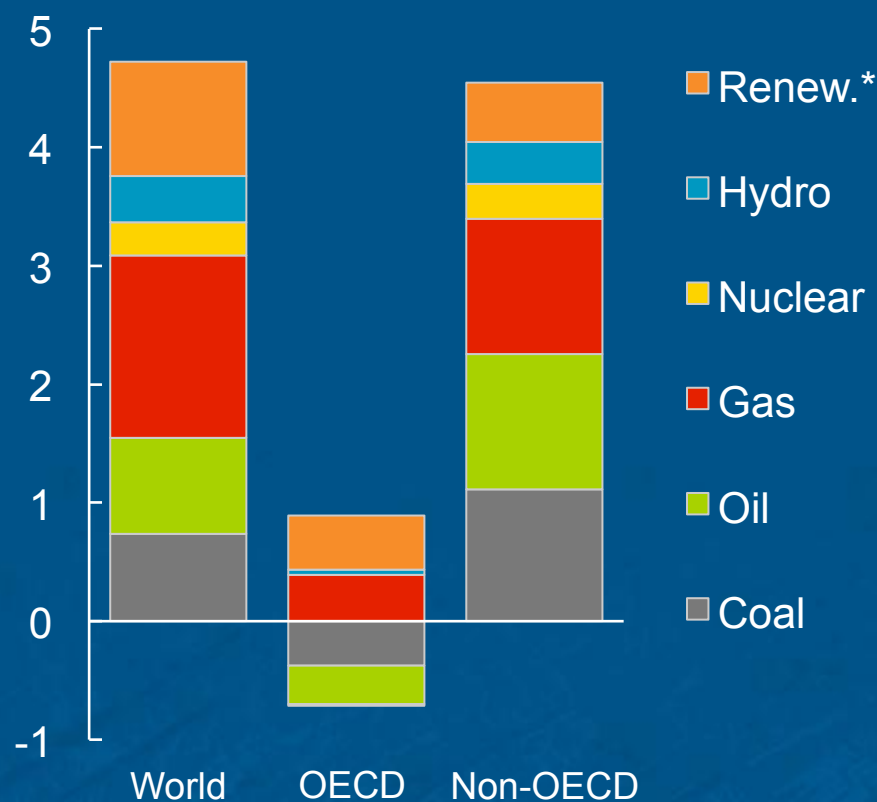
Shares of primary energy



*Includes biofuels

2013-35 increments by fuel

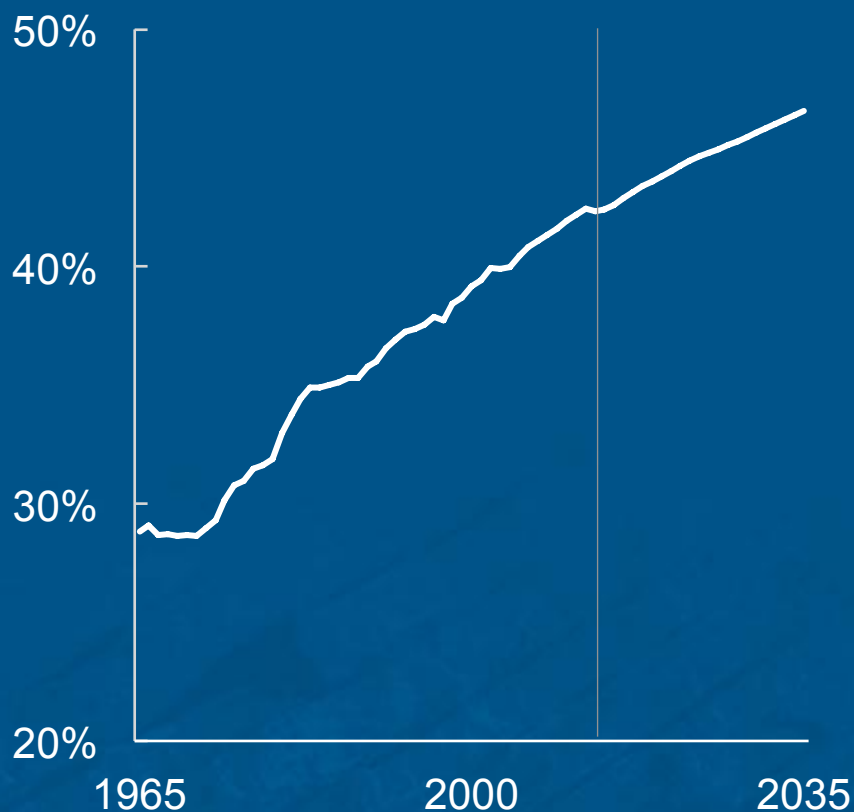
Billion TOE (tons oil equivalent)



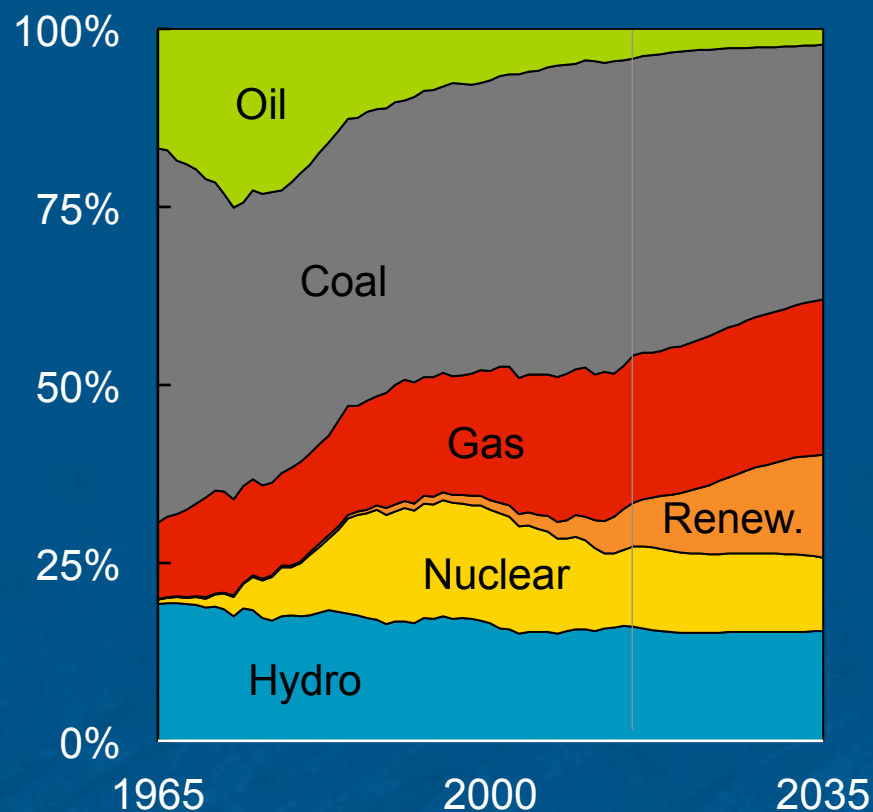
The power sector takes an increasing share of energy and plays a key role in the energy mix



Inputs to power as a share of total primary energy



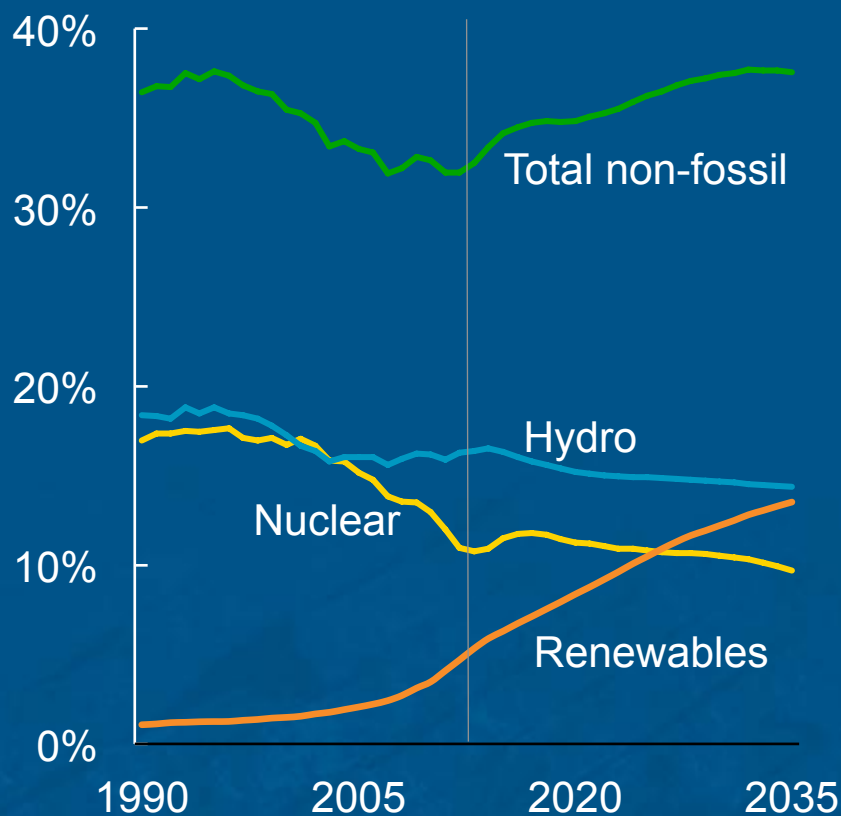
Primary inputs to power



Share of power from non-fossil fuels increases driven by the rapid growth of renewables

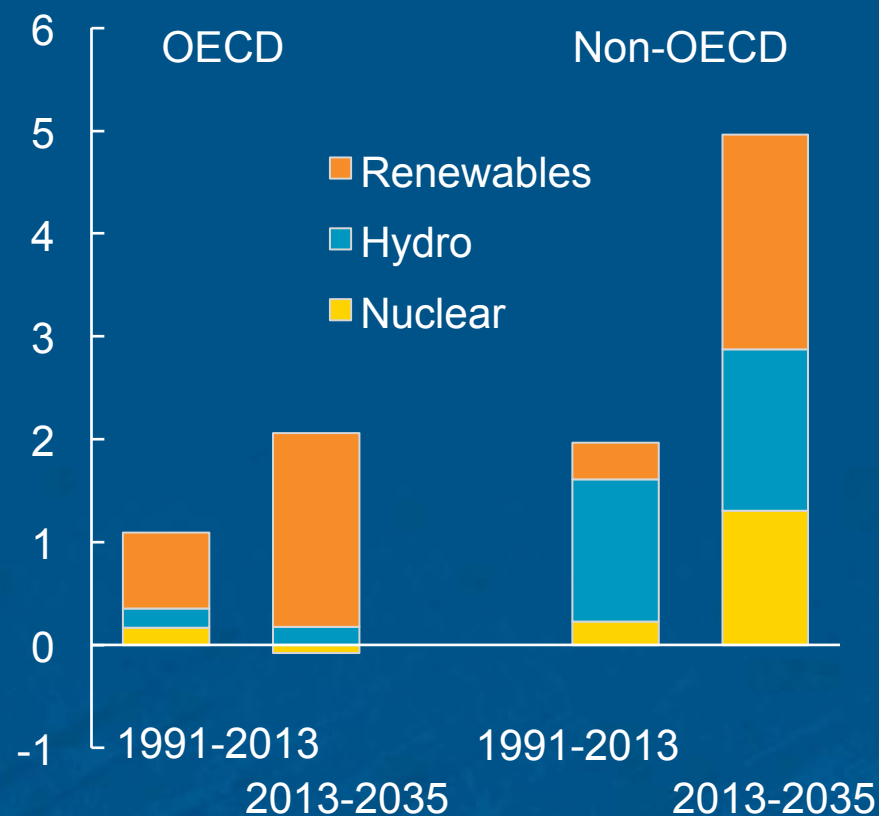


Share of world power generation



Growth of non-fossil power

Thousand TWh (tera-watt hours)

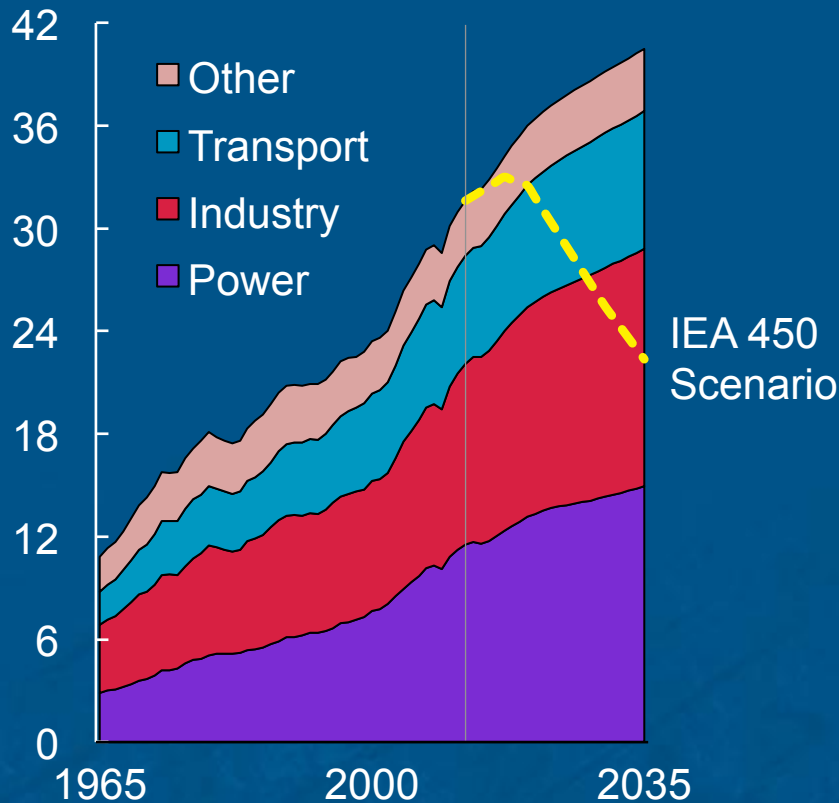


Carbon emissions are rising too fast for comfort which could trigger additional abatement policies



Emissions by sector

Billion tonnes CO₂



Options that achieve equal CO₂ emissions reductions*

Abatement option	Change required
Replace coal with gas in power (% of total power)	1%
Add CCS to coal power plants (% of total power)	0.7%
Increase renewables power generation	11%
Increase nuclear power generation	6%
Improve vehicle efficiency	2%
Improve 'other sector' energy efficiency	1%
Improve efficiency of electricity production	1%

* Normalized for a 1% swing in the coal/gas mix in power generation, equivalent to 110 Mt CO₂. Estimates are based on energy shares in 2013.

Outlook for Careers in the Geosciences

- While the current price collapse has slowed oil and gas hiring in the short-term, long-term career potential is strong based on growth in population and gross energy demand.
- The changing energy mix is producing new career opportunities
- Careers in government, non-profit, and academia are less affected by oil and gas prices and provide alternately rewarding career paths.
- Cyclical hiring trends are the norm in this industry, the high-reward of working in this industry is tempered by periodic corrections – Don't panic, and use these times to learn new skills and make new connections, and be stronger when the cycle corrects to the upturn.
- The demographics of experienced professionals exiting the industry and without a sufficiently large mid-career workforce dictates the need for future new hiring and an excellent opportunity for students and YPs to capitalize.

Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students

Section 2

Careers in Geosciences



AAPG

Visiting Geoscientist Program

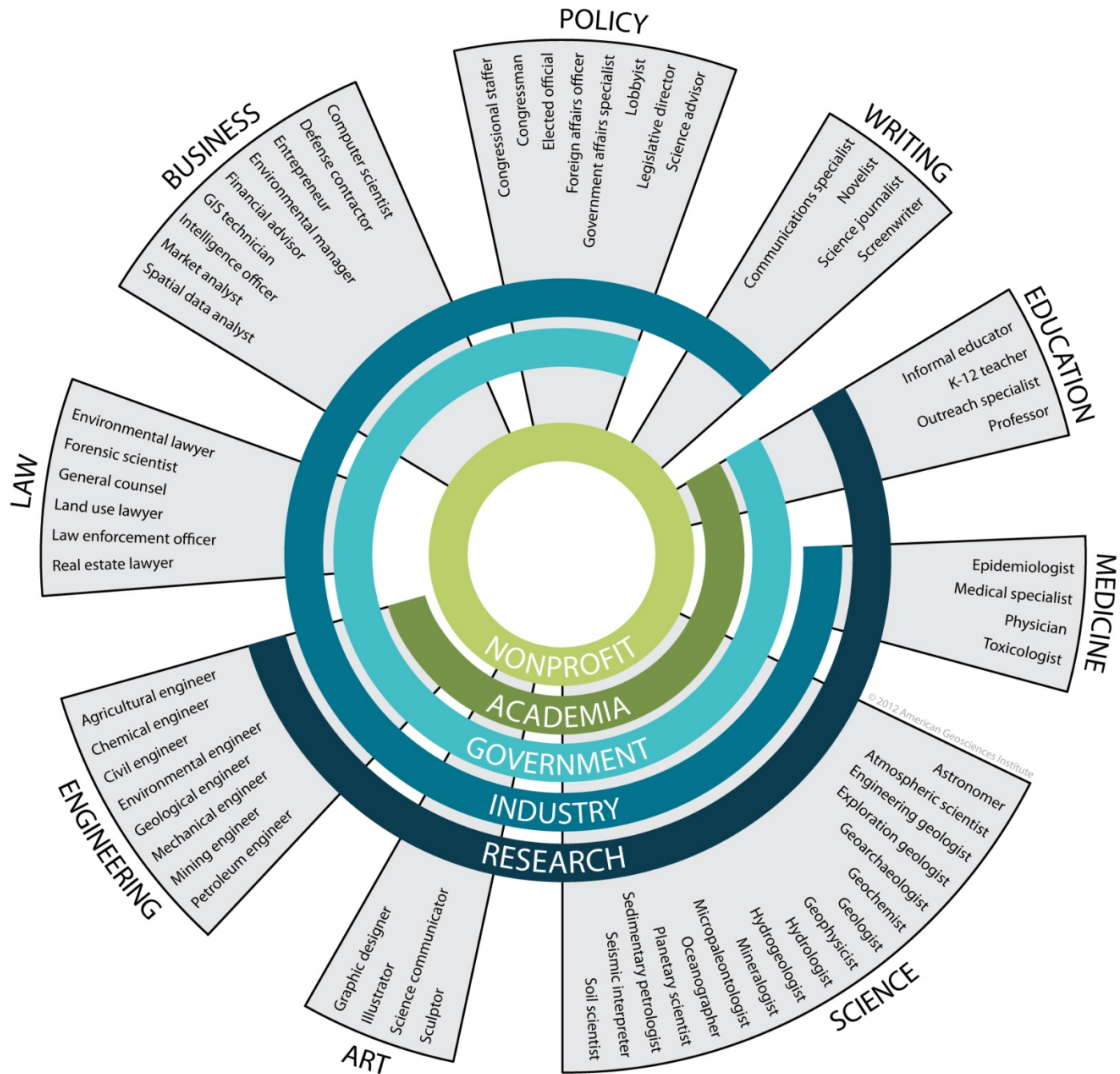
Outline

- **Industry Context (Section 1)**
 - Where is the market going in the near and long term?
 - What are some of the causes of the current contraction?
- **Careers / Jobs in the Geosciences (Section 2)**
 - **Geoscientist across the economy and in Government, Academia, and Industry**
 - **Broaden your experience and reach your desired level of education**
- **How to Get Started (Section 3)**
 - **Personal Stories**
 - Story 1
 - Story 2
 - **Interviewing**
 - **Placement**
 - **Networking**
 - **Young Professionals (YPs)**
- **Q&A**

What do you want in a career?

- During challenging times – We must evaluate whether the oil and gas industry is the one we want to work in?
- Are there other industries or experiences that you would like to tackle when work is less prevalent in the traditional exploration path? Can that make you a better professional? Geosciences and technical abilities compliment many industries – Where are exciting opportunities outside of the geosciences?
- During contractions in the market – academic organizations may typically look to recruit those that went to industry during better times. Does the independence, flexibility, and ability to publish excite you? An opportunity to extend study and make a name with research.
- Work for the government? Exciting and wide ranging jobs exist in energy and geoscience in the government/non-profit space.

Think Outside the Box!



Career success doesn't have to be limited to Energy!



Thomas Kocher

Was with Shell in the Netherlands and now with an insurance company in Switzerland.

Current position; risk engineer, providing the insurance business with a risk assessment perspective of the activities of their clients (petroleum companies across the upstream and downstream industry). His activity includes looking at exploration and well plans, assessing well integrity management program, surveying offshore installation or refineries.

“Studying geoscience and spending time in the oil industry has taught me a number of valuable skills to bring to the table in insurance: a broad general knowledge of the petroleum industry, familiarity with the terminology and mindset of our clients, strong analytical skills, and a deep technical knowledge of safety critical domains...”

Career success doesn't have to be limited to Energy!

Sujatmiko

Was with **Total**-Indonesia and now busy with a gemstone business in Indonesia.

Initially it was just a hobby but in 1989 Sujatmiko formed a company, GEM-AFIA. Through this company he promoted gemology and helped people improve their knowledge and skill on gemstones.

“I'd suggest the young generation to see gemology as a business opportunity in the future. If you don't have any skill, it will be difficult to start a new business”

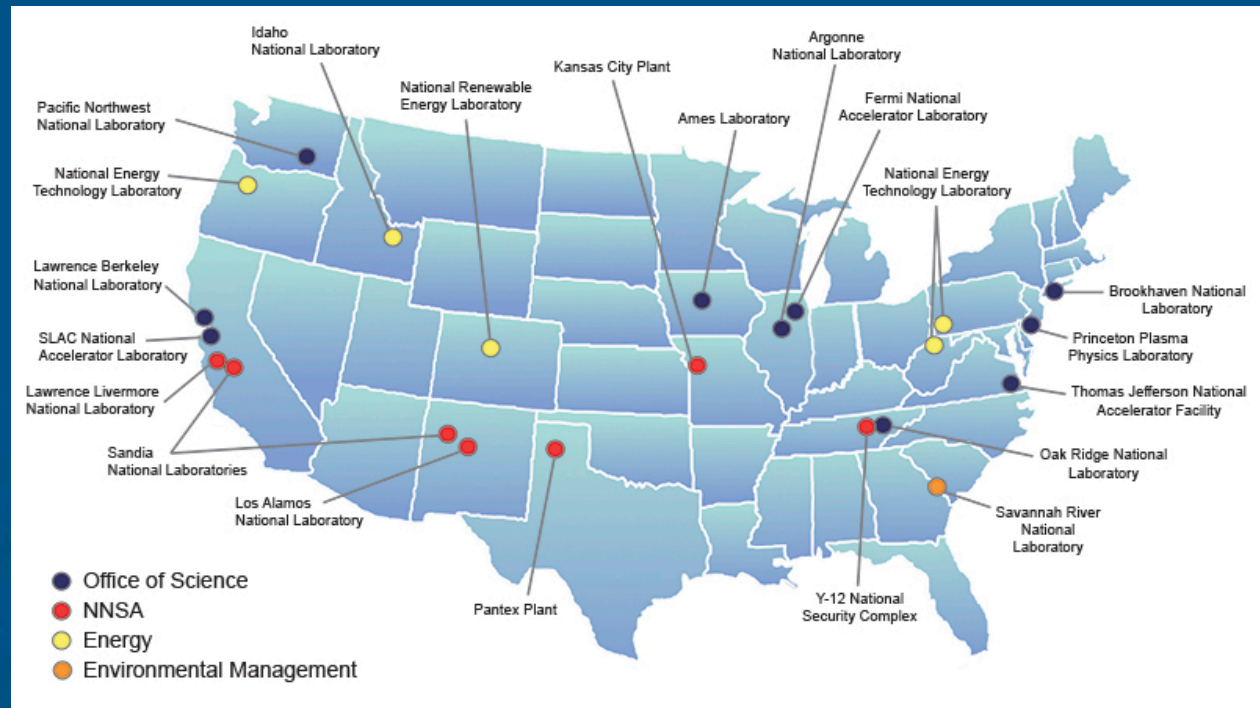


Expand beyond traditional industry jobs

- Consider careers in government and pure research.

- National Labs
- Research institutions
- USGS
- BOEM
- BLM
- Department of State

• www.usajobs.gov

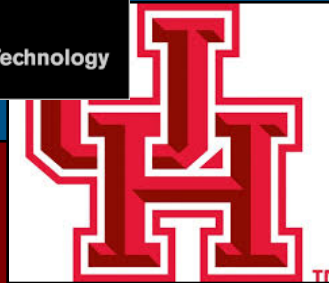


University Careers in Geosciences

- University Research positions are immensely rewarding

- Self-directed research
- Opportunities to publish and present
- Extended field work
- Teaching and mentoring
- Collaboration with colleagues
- Career stability

Typically moderately-lower salaries, need history of publishing, and more challenging to find openings.



Which Degree Should I Get

- BS or BA
 - A geotech for a large company, not recruited
 - In the trenches for a small company
- Masters
 - Bulk of people in industry
 - Able to hold any position, may be hard to get into a research role initially
- PhD
 - Can be important for academia and research, but less so for exploration and development
 - Advisable if you want to do applied research for a mega-company
 - Advisable if you may want to become a Professor/Research Sci
 - Small difference in starting salaries for 2+ more years

How Can I Prepare?

- Undergrad Level
 - Excel in all your courses – high GPA
 - Take fundamental, classic geoscience courses
 - Get exposure to all disciplines – attend seminars
 - Scan professional society journals – take note of who is working on topics that interest you
 - ASAP decide on a sub-discipline
 - Choose a “senior topic” that you have a lot of interest in, work it well, be creative and application-minded
 - Search for undergraduate research position at the university or internships away from school

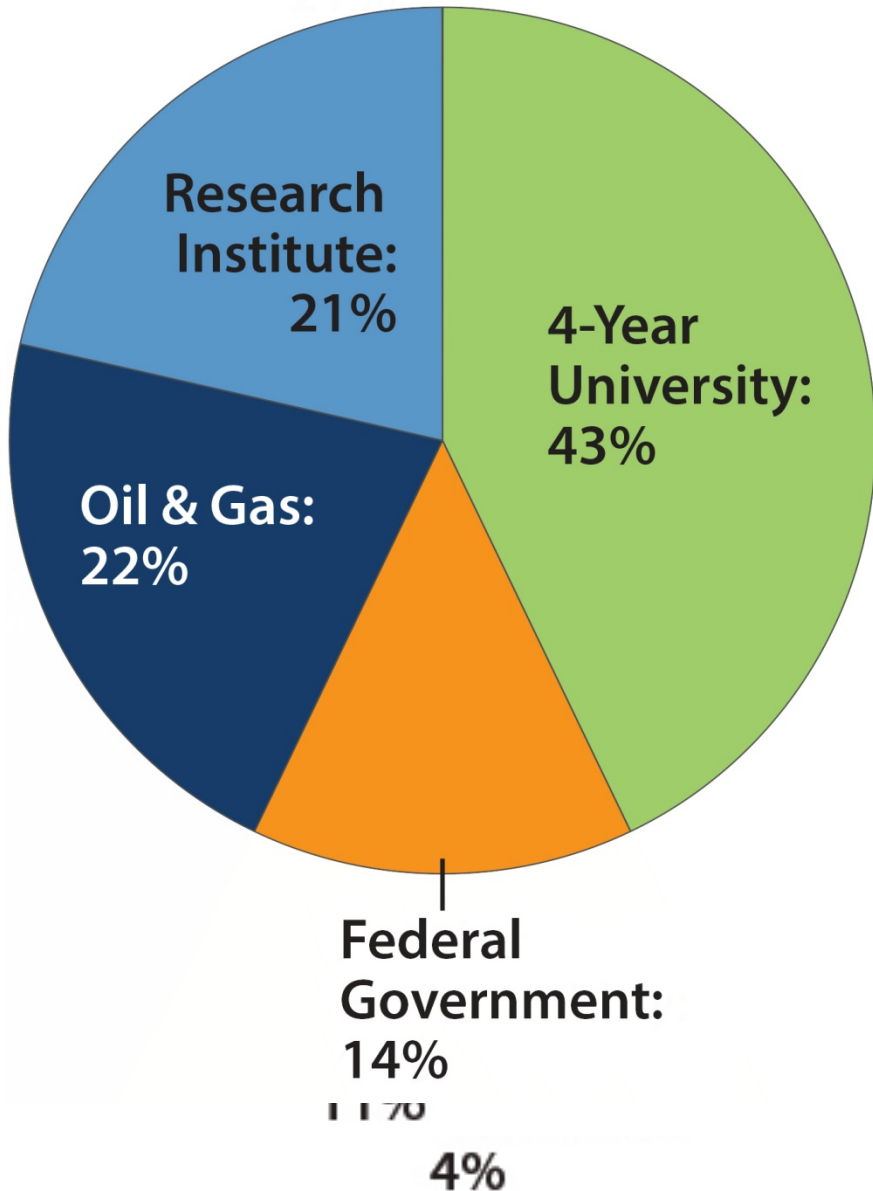
How Can I Prepare?

- Grad Level
 - Choose a high-caliber university with a great geoscience department
 - Excel in all your courses – high GPA
 - Take courses that will give the depth & breadth
 - Look for way to demonstrate leadership potential
 - Get some good work experience – internship
 - Choose a research topic that we have passion for; better to have a superb thesis topic on something unrelated to industry than a mediocre thesis
 - Gain interviewing experience, Polish your resume/CV – sell yourself
 - Get active in the school's Student AAPG group and participate in IBA
 - Go to the local Prof. Geological meeting get to know the local geoscientists
 - Present research work whenever possible; posters, oral, symposia..

What does this all mean for today's graduating geoscientists

- Careers in Geosciences remain important
 - Petroleum and minerals are cyclical industries that go through periods of hiring and lay-offs.
 - Roles of geologists have diversified greatly over the past 30 yrs.
- Long term
 - We will need a lot of geoscience professionals to replace those retiring and to accommodate the predicted job growth.
- Short term
 - Currently it is a time when companies are cutting expenses
 - Starting a career in the short term may be challenging
 - Companies will be very selective
 - Great qualifications and a lot of effort
- When oil prices rise and stabilize, hiring will spike to make up for the slowdown

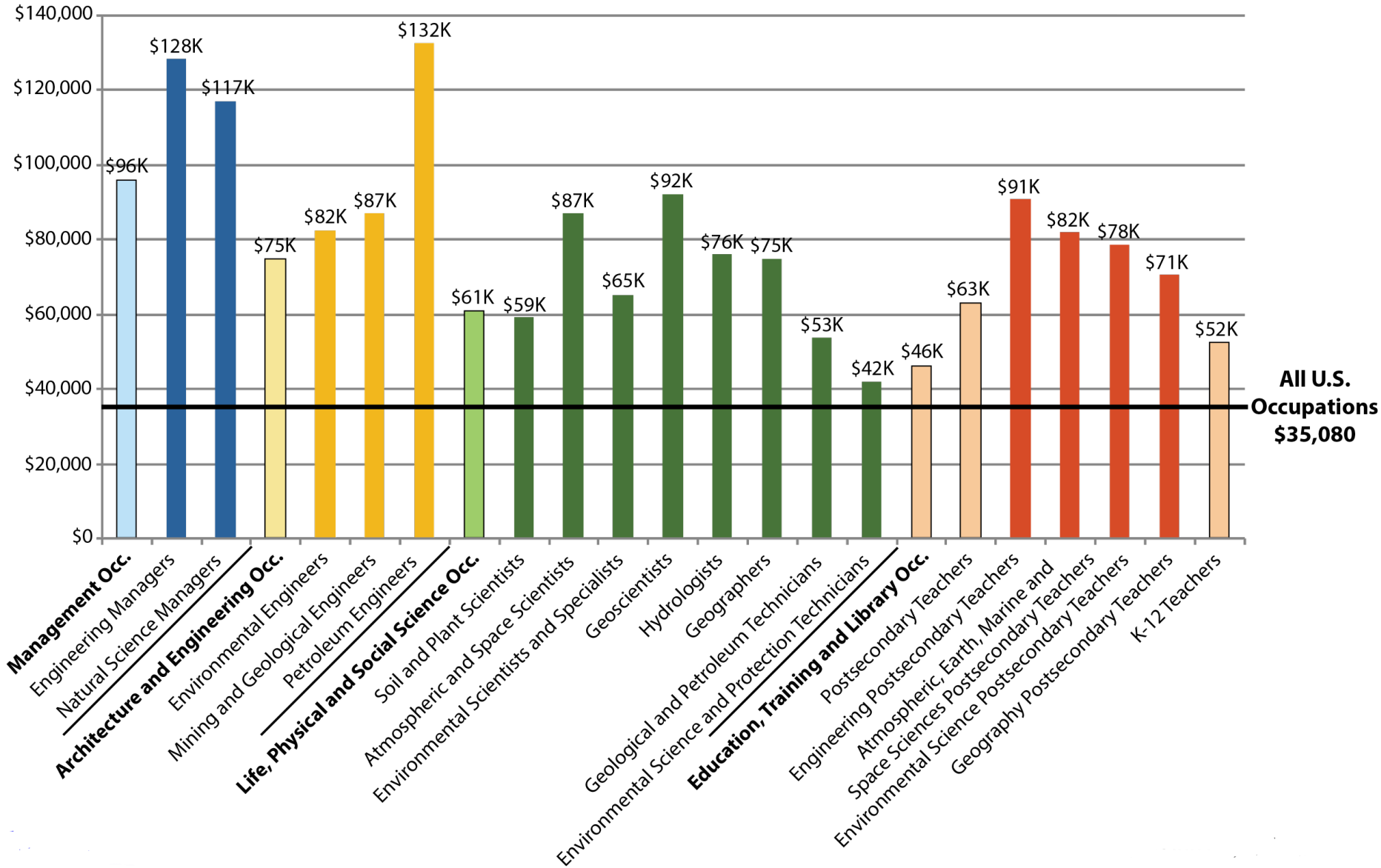
Doctoral Graduates



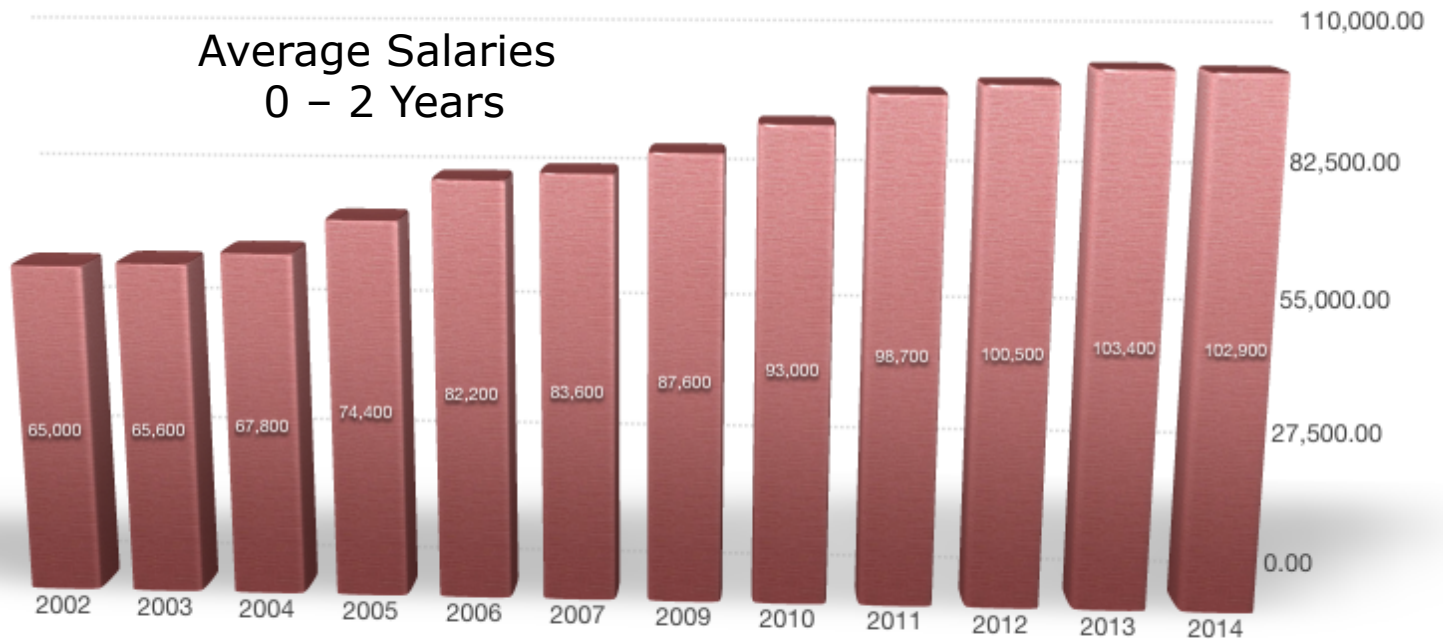
**Industries where
graduating
students have
accepted a job in
the geosciences**

The Breakdown: Workforce Trends

2013 Median Annual Salaries for Geoscience-Related Occupations



Recent Oil and Gas Industry Salaries: 0 – 2 Years Experience



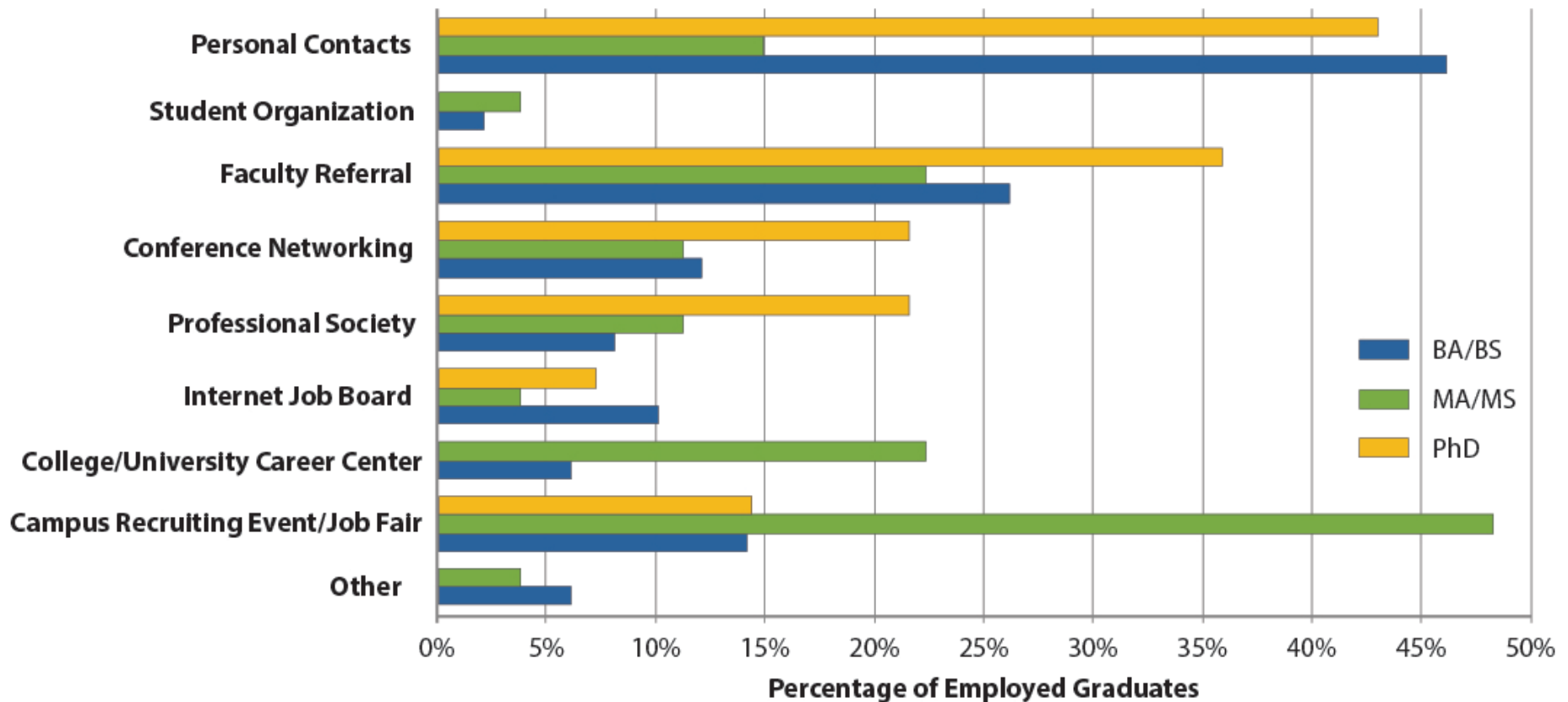
Salaries by Degree 0 – 2 Years (2014)

B.S	M.S	Ph.D.
\$92,000	\$104,400	\$117,300

Source: AAPG Explorer

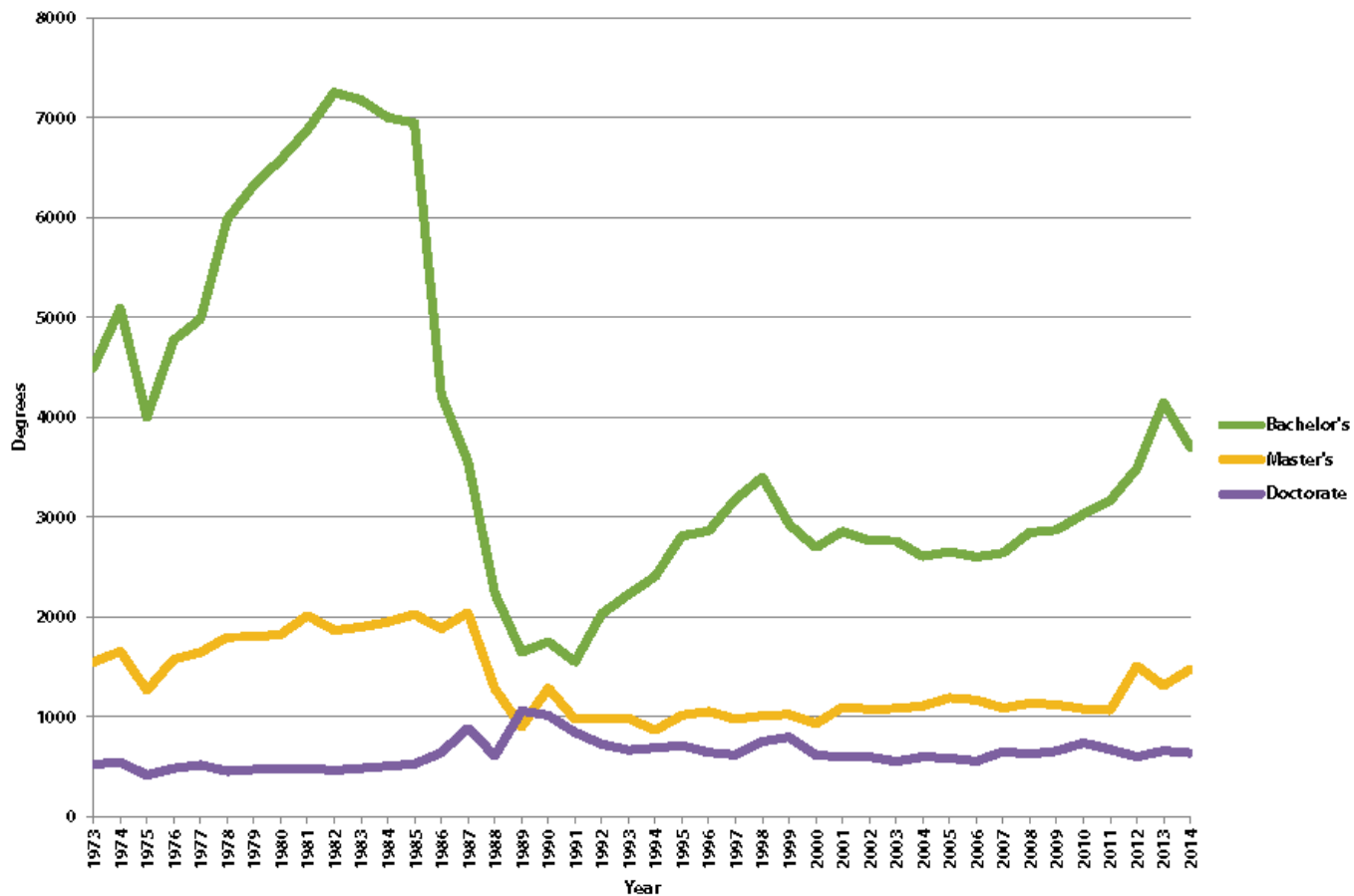
The Breakdown: Workforce Trends

Resources identified by students as useful for finding geoscience jobs



The Breakdown: Workforce Trends

US Geoscience Degrees Granted 1973 - 2014



Things to Consider for a First Job

- Salary, vacation, work hours
- *Location*
- *People & facilities*
- *Training program*
- Benefits, includes a pension
- Job and work environment (Government, non-profit, Industry, or Academia)
- Stability
- Bureaucracy
- Initial assignment
- *Opportunities to grow/move*

Big vs. Small Companies

A BIG company

- Competition is great
- Work with great minds
- Pressure to perform
- Can specialize
- Able to shift a lot

- May rank below average
- No special treatment
- Mega-bureaucracy

A SMALL company

- Competition is still high
- Work more friendly
- A bit less pressure
- Jack of all trades
- Not much latitude

- May rank above average
- Individual rewards
- Less bureaucracy

What If I Graduate Soon?

A Two-Pronged Strategy

ENERGY INDUSTRY

Market yourself to industry

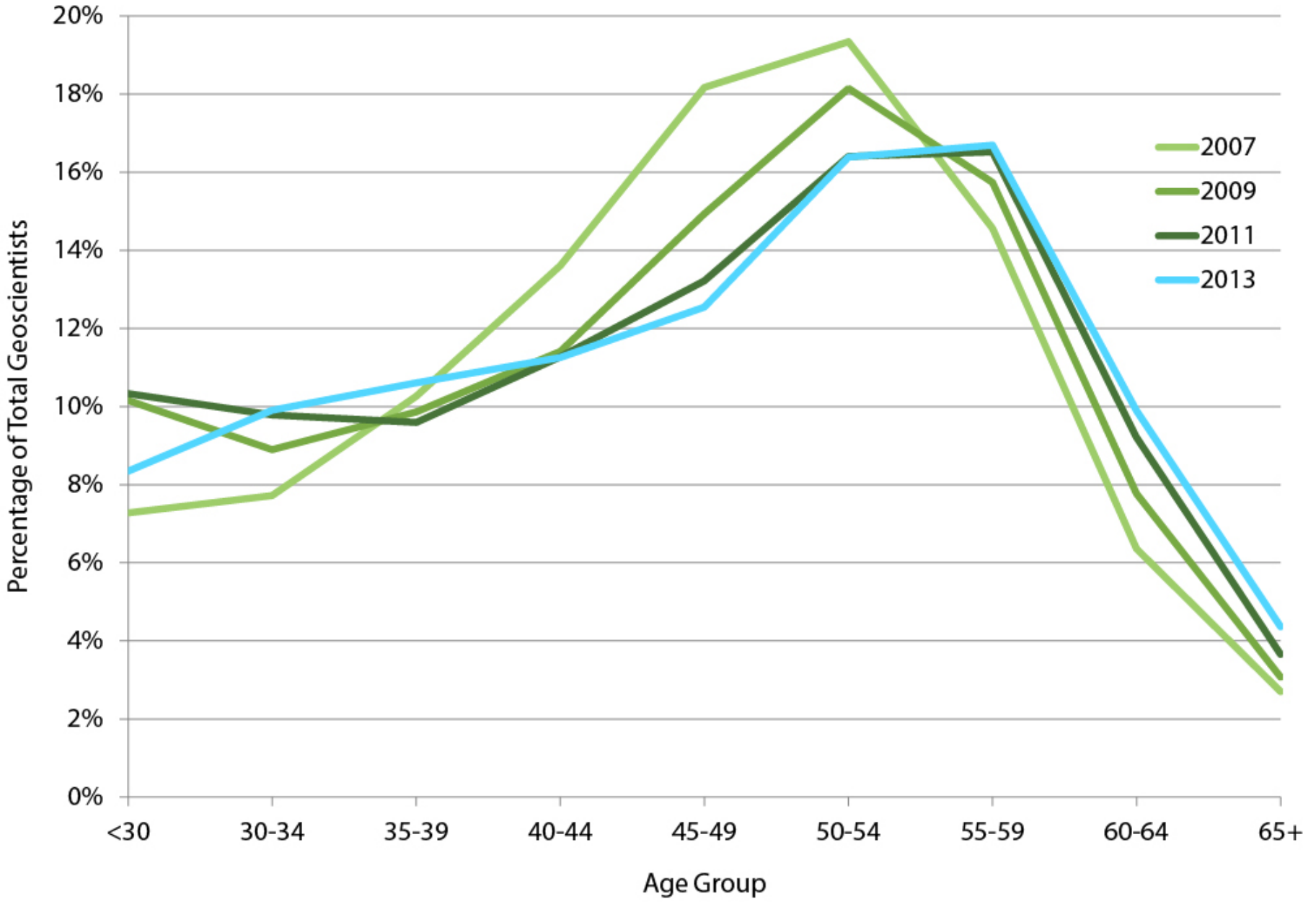
- Apply online
- Polish CV
- Prepare poster
- Present at Expos
- Interview when possible
- Network
- Attend professional society meetings
- Be seen, shake hands, etc.

OTHER INDUSTRIES

Market yourself as:

- An accomplished scientist
- A skilled data analyst
- Highly computer literate
- An educator
- Someone interested in business & finance
- Other skills and areas of interest you have acquired

Age Distribution of Geoscientists Employed in the Federal Government



Surviving and Thriving in the Cycles

Most oil and gas professionals experience a “change” in employers at some point in their careers – but it doesn’t mean it’s a negative, its just a change.

Case Study: **Dr. Kitty Milliken**

Graduate with PhD from the University of Texas in 1985

Hired Exxon 1985

Released in 1986 (Exxon budget cuts)

Returned to UT as Research Assistant in 1986

Taught and performed research at UT until 2006

Joined the Bureau of Economic geology and now
Senior Research Scientist



“I like research because I like uncertainty, you don’t know what it means so, you go and find out”

She was successful because she was smart, hard working, had an scientific interest and the ethics to see it through. The change in career path did not slow her down!

Numerous awards
ground breaking publications
Scientific recognition



Careers in the Geosciences

- In the current contraction, the traditional tract of hiring will be more challenging, decide if the energy industry is right for you, and if so, consider a tangential path (business, statistics, environmental, management) that can get you to a successful career and make you a stronger, more desirable geoscientist.
- Consider altering your academic path by adding additional classes, another degree, or post-doc work. Look for academic research projects that gain you additional experience.
- Careers in government, non-profit, and academia are less affected by oil and gas prices and provide alternately rewarding career paths.
- Evaluate your career desires, and don't be afraid to try new avenues that can strengthen and broaden your skill set. These connections and skills will be valuable assets during the next industry expansion!

Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students

Section 3

How to get Started



AAPG

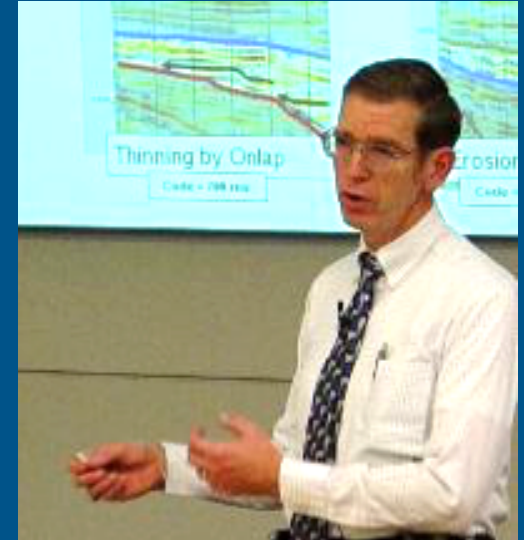
Visiting Geoscientist Program

Outline

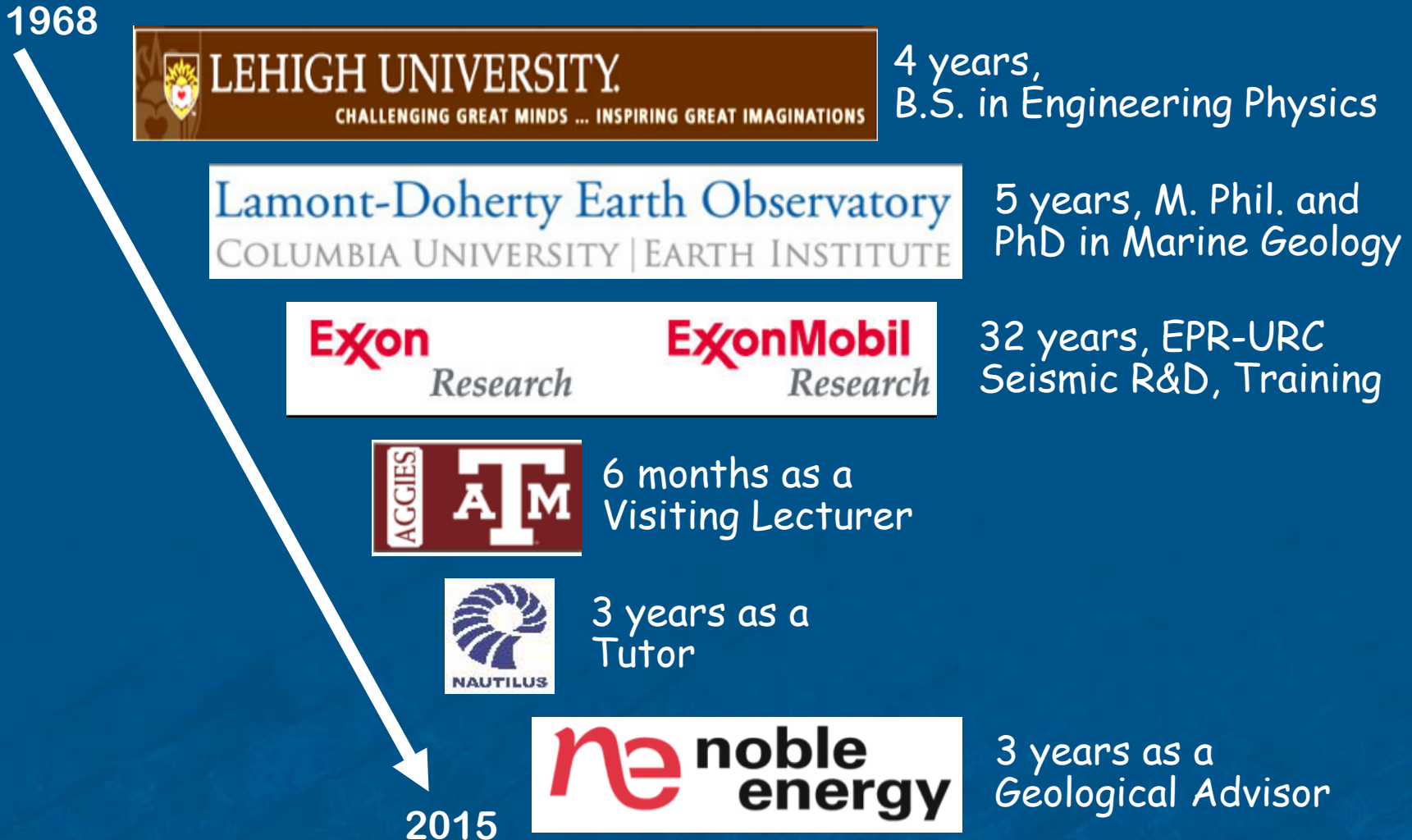
- **Industry Outlook (Section 1)**
 - Where is the market going in the near and long term?
 - What are some of the causes of the current contraction?
- **Careers / Jobs in the Geosciences (Section 2)**
 - Geoscientist across the economy and in Government, Academia, and Industry
 - Broaden your experience and reach your desired level of education
- **How to Get Started (Section 3)**
 - **Personal Stories**
 - Story 1
 - Story 2
 - **Interviewing**
 - **Placement**
 - **Networking**
 - **Young Professionals (YPs)**
- **Q&A**

Personal Stories

Two Examples of how experienced geoscientist had both exciting and rewarding careers in exploration and academia even with the complex nature of the oil and gas industry!



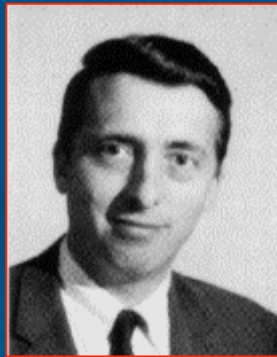
Example 1 – A Training & Career Path



Coming Out of Grad School

I Was Triple Blessed:

1. Industry just started a hiring boom
2. I received an offer from Exxon Research
3. I was assigned to the Seismic Stratigraphy section and was mentored by:



PETE VAIL



BOB MITCHUM

**The Fathers of
Seismic Stratigraphy**

My Areas of Study

Specialties

- Seismic Interpretation (2D & 3D)
- Seismic Stratigraphy
- Basin Modeling
- Seismic Attribute Analysis
- Volume Interp & Visualization

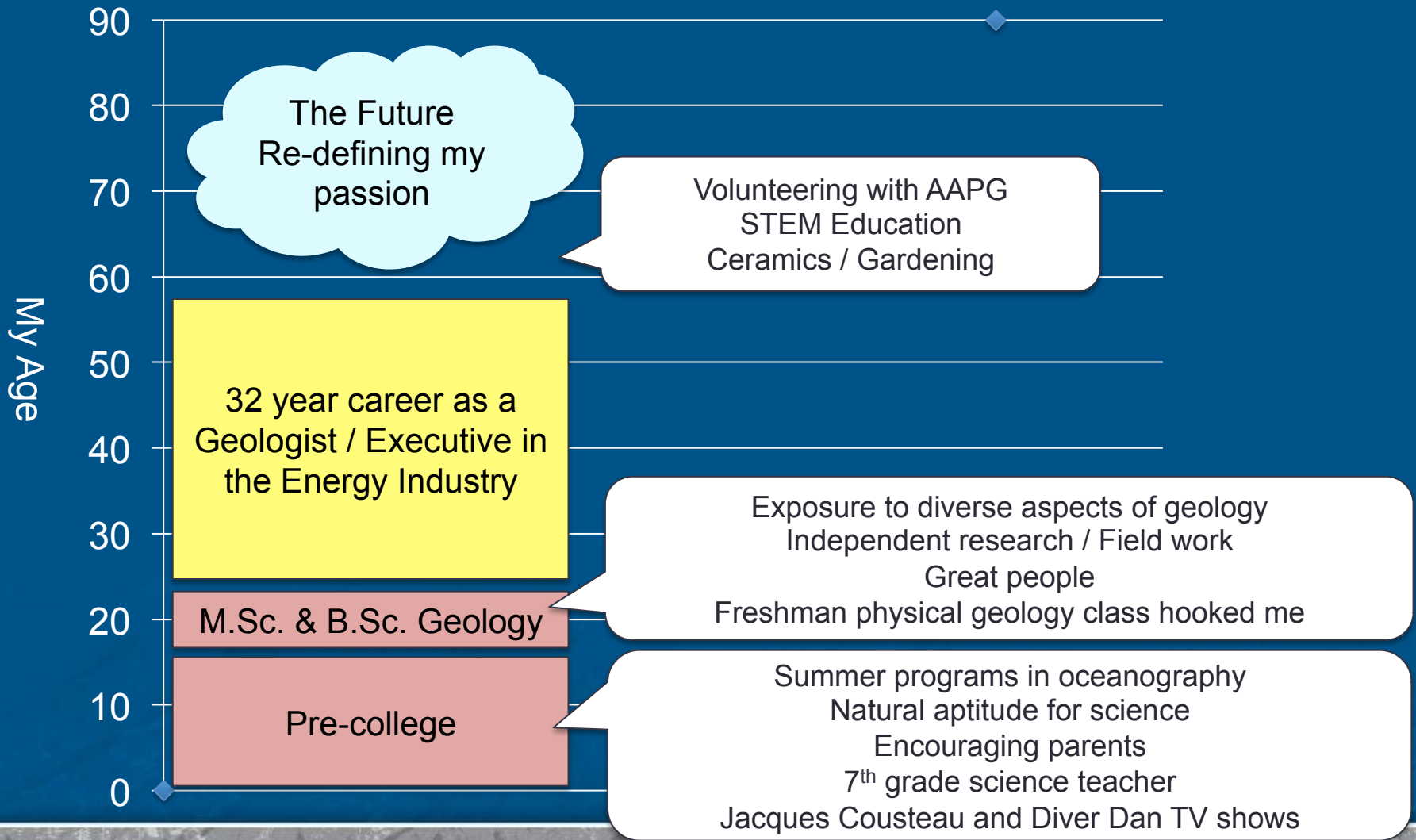
Main Tasks

1. R&D New Interp Methods
2. Apply New Interp Methods
3. Training/Mentoring



Basin I've Studied 6+ months

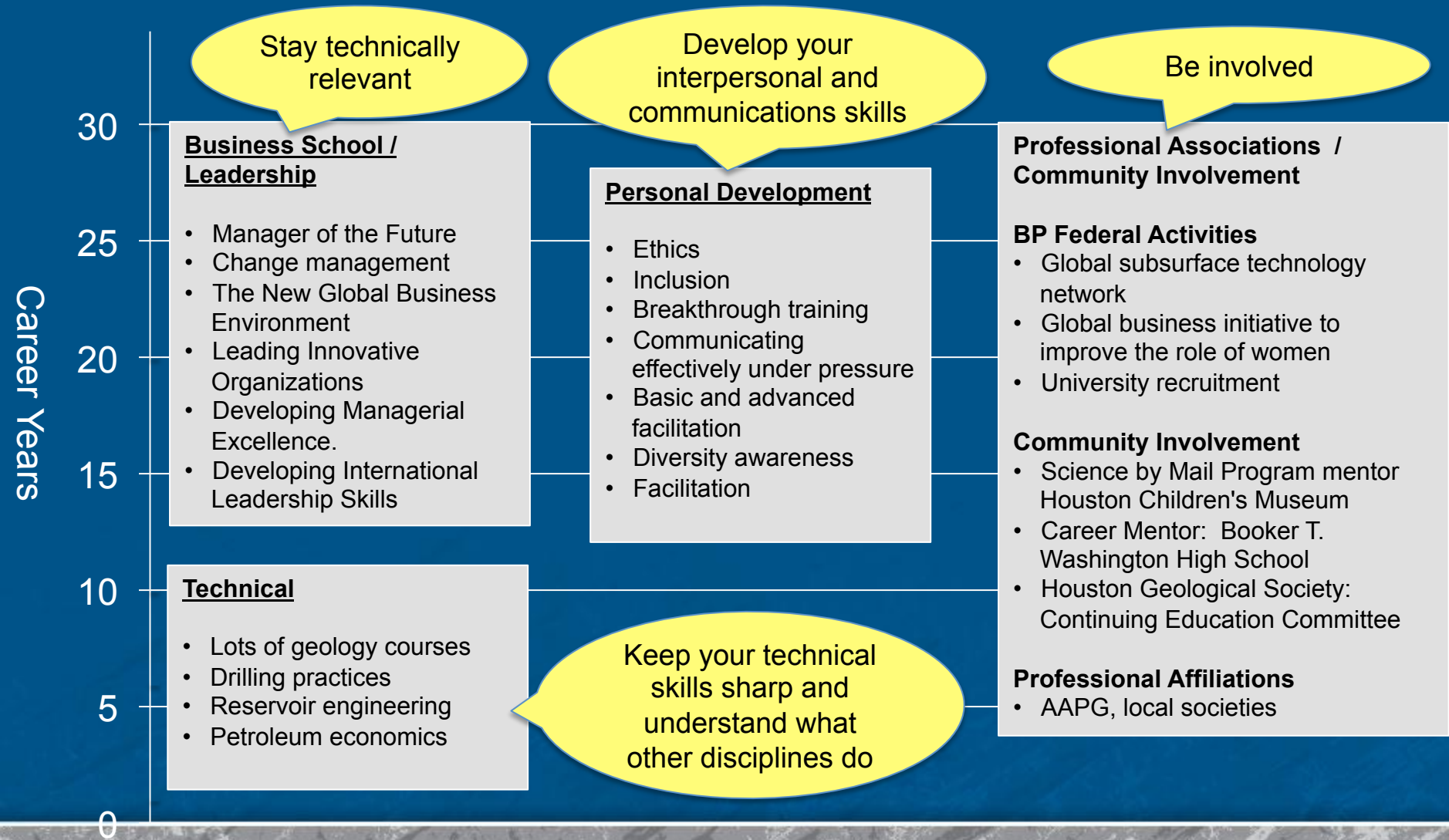
Finding and nurturing my passion for geology: A career is a life long Journey



Formal education... building a solid foundation

Years	6	<p>M. Sc. Geology</p>	<ul style="list-style-type: none"> • Geophysics • Micropaleontology • Geol. Oceanography • Basin Analysis • Seminars: <ul style="list-style-type: none"> • Paleontology • Geochemistry 	<p>Thesis: Fluctuations in the West Antarctic Ice Sheet during the Miocene: Evidence from ice rafted sediments</p>	<p>Teaching Assistant Physical Geology and Mineralogy Labs</p>
4	3	<p>B. Sc. Geology</p>	<p><u>Geology</u></p> <ul style="list-style-type: none"> • Senior Thesis • Optical Mineralogy • Petrology • Structure • Stratigraphy • Geomorphology • Oceanography • Micropaleontology • Sedimentology • Coastal Processes • Mineralogy • Historical Geology • Physical Geology 	<p><u>Science & Math</u></p> <ul style="list-style-type: none"> • Physics • Chemistry • Biology • Introduction & Intermediate Calculus 	<p><u>Liberal Arts</u></p> <ul style="list-style-type: none"> • Native American Religions • Imperial Russia • Survey Art History • French (3 years) • Economics
1	0				

Staying competitive throughout a career requires continuous growth



The start of my career !

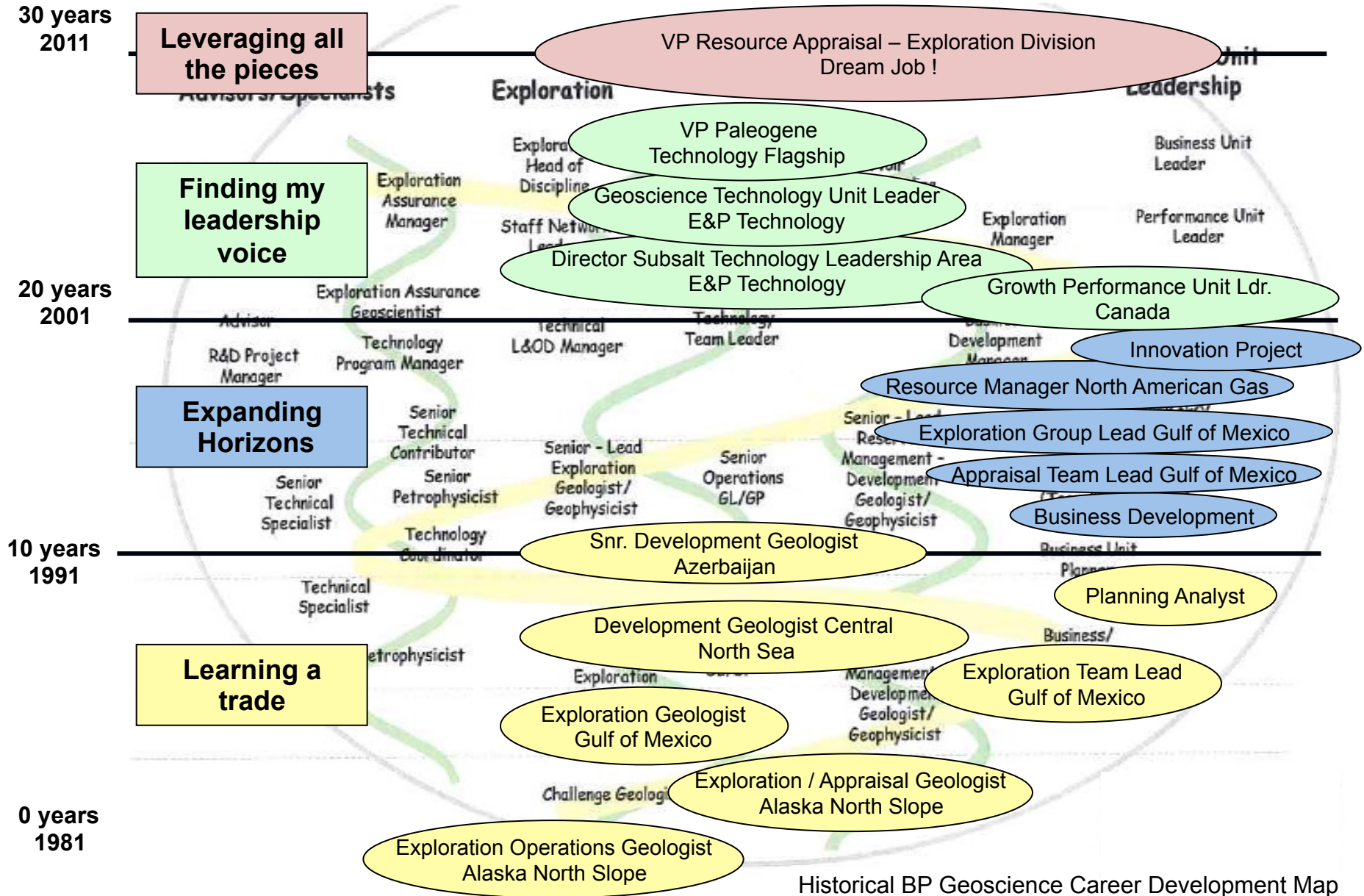


Wide eyed
24 year old



1st job as a well site geologist on the
North slope of Alaska in 1981.

.....My Career Path



Historical BP Geoscience Career Development Map

Events that rocked my world and shifted my path.

Geoscience	Commercial	Technology Leadership	Asset Leadership
	VP Resource Appraisal		Gulf of Mexico Oil Spill
Creating my own future – Declaring what I wanted to do landed my dream job		VP Paleogene Technology Flagship	
		Geoscience Technology Unit Leader	
		Sub Salt Imaging Technology Leadership Director	
			Performance Unit Leader Canada Gas Business
			Continent Business
Career disappointment / Not getting what I wanted forced me to broaden my skills to be more competitive		Personal illness Learned not to be afraid to fail Found love	Resource Manager North American Gas
	Business Development GoM		Exploration Group Ldr Gulf of Mexico
Snr. Development Geologist Azerbaijan			
	Commercial / Planning Analyst		
Development Geologist North Sea			
Exploration Geologist Gulf of Mexico			
Operations / E&A Geologist Alaska			
			Embracing the unknown. Be flexible
			Going on an adventure Seeing the world

A sense of adventure & a desire to see the world



Personal learning

- People get out of the way of someone who knows where they are going
- Content matters / Stay technically relevant
- Ethics matter
- Be flexible and willing to step outside your comfort zone
- Unexpected rewards of taking a risk
- Life occurs

What If I Graduate Soon?

Consider extending your stay in University?

Post-doc or research positions in universities are an excellent mechanism to grow scientifically while weathering the short-term Industry cycles and lack of employment.

This will give you continued access to recruiting, computing, and further research opportunities.

Consider additional degrees – While difficult to consider, additional degrees in business, geoscience, engineering, computer science could have a great long term benefit.

What If I Graduate Soon?

Explore your Universities resources

Don't neglect your University recruiting and placement offices

- Attend resume and writing workshops
- Attend out of department presentations
- Reach out to professors for advise and what they are hearing in terms of hiring
- Participate in IBA competitions in 2016
- Participate in mock interviews

What If I Graduate Soon?

Market yourself relentlessly!

Present your undergrad and/or graduate research at all applicable venues.

Internal symposiums

Local society meetings

As well as regional or national/international meetings

Fully spend out any presentation or development funds. Use these opportunities to network, show off your work, and hone your presentation skills.

Posters are generally more work, but in many cases, more impactful.

Different Types of Networking

- Informal

- Conferences
- Out with friends
- On the street
- *Anywhere*

- Formal

- Conferences
- Informational Interviews
- Networking lunches
- Career fairs

Interviews with Professionals



“It’s great to identify what [your] dream job would be, and it’s great to pursue it, but don’t pursue it too doggedly so that you don’t see other opportunities out there ... The one thing that everyone should take away from every job they’ve ever had is that you learn something in anything you do: you should be developing some skill set that comes out of that. And you build on that. I learned much of my people management skills from being a bartender!”

-Vicki McConnell, Oregon Department of Geology and Mineral Industries
Now incoming Executive Director at the Geological Society of America

Interviews with Professionals

“At the end of the day, the most important [elements to being extended a job offer are] a combination of your technical skills plus your people skills. Clicking with a recruiter is the most important step to go forward in the interviewing process ... A recruiter friend of mine told me, ‘I know with[in] only the first 2 minutes of meeting a candidate if I will call him/her for a second interview.’”



- Juan Herrera, Schlumberger

Interviews with Professionals

“COMMUNICATION, communication, communication.

When you're in undergrad for a technical degree you're sitting there and you're stressing over, 'how am I going to be a better forecaster and what computer language do I have to learn next?' Honestly, at my job I spend most of the day communicating with customers. And it was nerve-wracking at first, learning how to explain technical information to a lay person is really important, and that's something you don't learn in undergrad.”



Interviews with Professionals



“If students want to get into the environmental or consulting field, I would recommend that they... Find engineering and consulting firms in their area. And not necessarily look for somebody that is advertising, but just find a contact with each company, send a cover letter and a resume, and then follow up with an email and a phone call. A lot of opportunities don’t get advertised. If your resume crosses a desk, and somebody’s looking to fill a position, you can get a job without having to wait for something to be advertised ... That’s the networking thing: Get your qualifications out to as many people as you can [and] talk to as many people as you can.”

- **Mike Lawless**, Draper Aden Associates



What If I Graduate Soon?

Consider volunteering on committees!

Network – Get involved in your local Societies (Scholastic, Environmental, or Geological).

GCAGS Annual meeting 2014



If you have an interest in working in the Energy Industry – Look for AAPG affiliated societies in your area. They are some of the best ways to meet more experienced geoscientist and make long lasting connections. Offer to work on committees and convention teams.

While degree and scholastic performance may be most critical for the first opportunities, Typically your second job will be based on reputation and your network of connections.

Local Society Networking Events

<http://www.aapg.org/about/aapg/leadership/sections>

Refer to this website for a list of all Sections

<http://www.aapg.org/about/aapg/leadership/regions>

Refer to this website for a list of all Regions

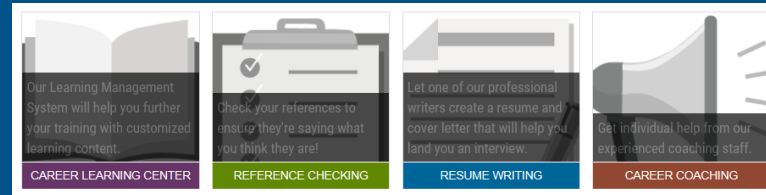
Many jobs (possibly 90%) are not advertised and only acquired through networking. There are hidden opportunities at all times during your career



AAPG Services

AAPG Career Center

- Resources
- Job postings
- Recruiter information*
- Available at meetings

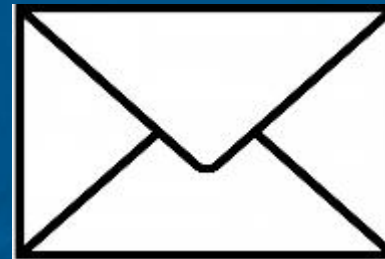


AAPG Division of Professional Affairs

- Layoff Triage Tool*

AAPG Education Services

- Career-focused digital newsletter*



*Not yet available

Networking

Where can I network with professionals outside of the AAPG?
Consider YPE



YPE members have access to a network of 40 chapters worldwide with: Engineers, landmen, financial analysts, lobbyists, governments employees, accountants, attorneys, commercial and investment bankers, A&D professionals, principal investors, consultants, roughnecks,

Young Professionals in Energy

- **Mission:**

YPE aims to facilitate the advancement of young professionals in the energy industry around the world through social, educational and civic service oriented events.

- **Vision Statement:**

YPE prepares its members to be the best leaders for their communities and for the global energy industry.



YOUNG PROFESSIONALS IN ENERGY

Societies with YP and Student Opportunities

Networking



Education



Speaking

Travel and grants

Cross-discipline



Research opportunities



Networking

What is networking? It is NOT you trying to get something out of someone else! It is you promoting yourself and getting to know people who can benefit by you and your expertise. It is a WIN-WIN situation.

Networking:

- Is a spectrum of activities
- Begins with an informational, informal interview or introduction
- Is a series of correspondence and actions that add value to both relationships
- Ends only when one or both parties 'drop dead'

What to do?

- Get on LinkedIn ASAP; your resume is your profile
- Make a customized LinkedIn URL
- Make contacts by sending customized messages

AAPG Career Training

- ***When times are tough,
get educated!***

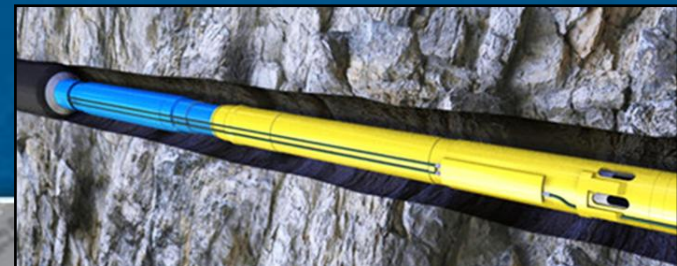


Richard Green – Reservoir Eng. for Petr. Geo

- Lots of available courses offered through AAPG:
- <http://www.aapg.org/career/training#2168214-in-person-training>
- Bear Trap Scholarships offered for many Courses and forums
– highly discounted rate for individuals who have been laid off

AAPG Short Courses

- Short Courses – One to two day course covering a broad list of topics:
 - <http://www.aapg.org/Career/Training/In-Person/Short-Courses>
- Field Seminars – Locations around the globe to key in on geological understanding and scale:
 - [http://www.aapg.org/career/training#Field Seminar](http://www.aapg.org/career/training#Field%20Seminar)
- Forums – Attend talks to brush up on up to date topics across the industry:
 - <http://www.aapg.org/career/training#Forum>
- Workshops - Classroom courses that strengthen understanding of specific basins and/or geologic interpretation skillsets:
 - <http://www.aapg.org/career/training#Workshop>
- Online Courses – Cheaper alternative to workshops for those looking to further knowledge in various industry skills:
 - <http://www.aapg.org/career/training#2168215-online-training>



AAPG Short Course Discounts

- Discounts Available to Students
 - Student member discounts – reduction of cost for student members
 - Grad student projectionist program – help to make courses run more smoothly, and in exchange, be able to take the course
- “Get out of the Bear Trap” Discount – discount for industry professionals laid off during the down turn – up to a 75% discount on course costs!

Students and YPs: How to “weather the storm”

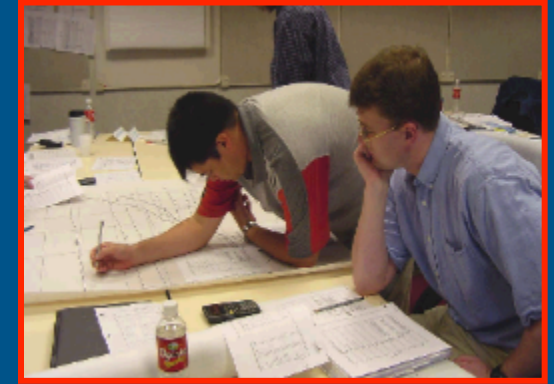
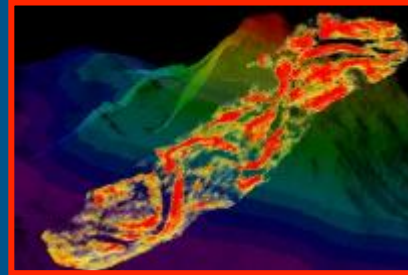
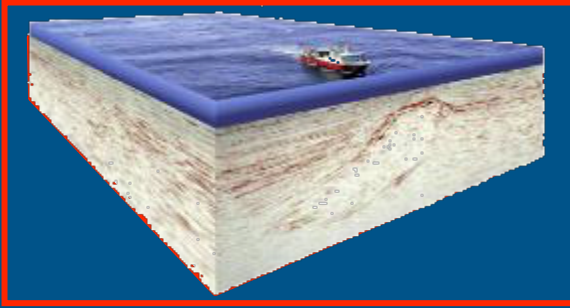
Hiring freezes and layoffs can happen in any industry, but there are a few things recent graduates and YPs can do to help improve their chances of getting and maintaining employment:



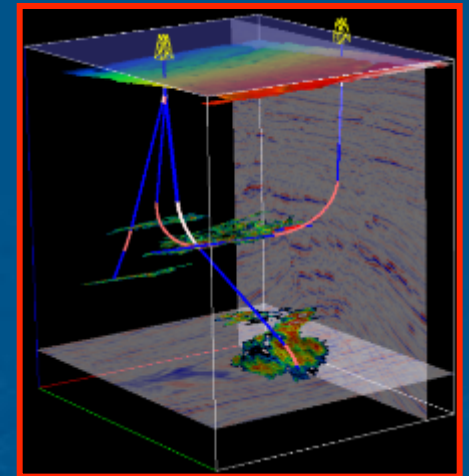
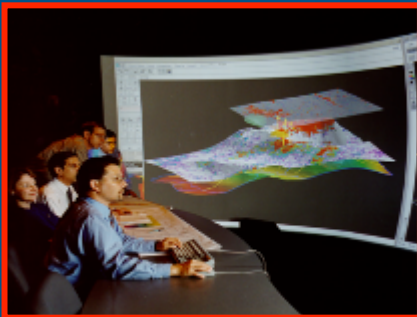
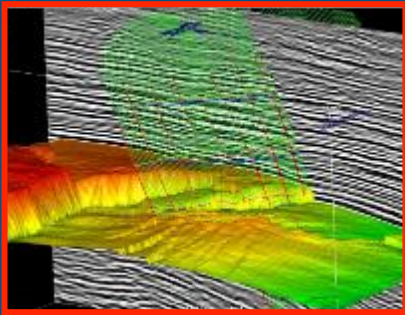
- Stay involved in professional and local societies
- Volunteer for committees
- Be engaged in internal groups
- Acquire a broad set of skills
- Take continuing education courses
- Demonstrate curiosity and a desire to learn
- Cultivate leadership and entrepreneurial qualities
- Network with individuals in multiple aspects of the industry
- Be active in the community and stay busy
- Don't panic!

Be positive and fight on!

- Forecast is for a steady demand for Geoscientists over the next 30 year.
 - Short term may be challenging
- Diverse geosciences career options exist
- Find and follow your passion, love what you do!
- Be technically strong and grow scientifically
- Remain competitive by gaining new skills
- Develop a strong network and stay connected
- Be involved, Be involved, Be involved



Questions?



Possible Questions from Students

Career Path & Advancement

Did you do something to make yourself stand out?

How did you end up studying Geology?

What are some of the key tips that you can offer to us that you can take away from your journey through the petroleum industry?

Which was more stressful/Demanding: Working in Explorations, or production/development?

With the extensive travel that her positions have afforded her, what is the place that upon recollection can still bring a smile to her face and why?

Geology/Technical/Technology Questions

What is the most "geologically interesting" basin you have worked in?

Would you advise students to be technologically savvy if they're majoring in the geosciences? For example, knowing how to code and learning GIS?

What motivated you to find a new imaging technology strategy? Was there a specific point in your career or research where you realized a change in strategy needed to be explored?

Possible Questions from Students

Organizational Leadership, Community Engagement, and Work-Life Balance

How did you motivate people to reach out beyond what they thought was possible and embrace challenge in pursuit of an idea?

How great is the importance of being involved with the community outside from work?

In your personal experience as a professional is it important to have a work-life balance or is it more of a work-life integration atmosphere?

What is the best strategy for students interested in petroleum geology careers during a downturn like now?

Clearly, there are reduced immediate opportunities to be hired, so what is the best course of action for a student not fortunate enough to get an offer for an internship or full-time position?

What initial career path would best prepare them and make them most attractive to be hired when things turn up again?

Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students

Additional material

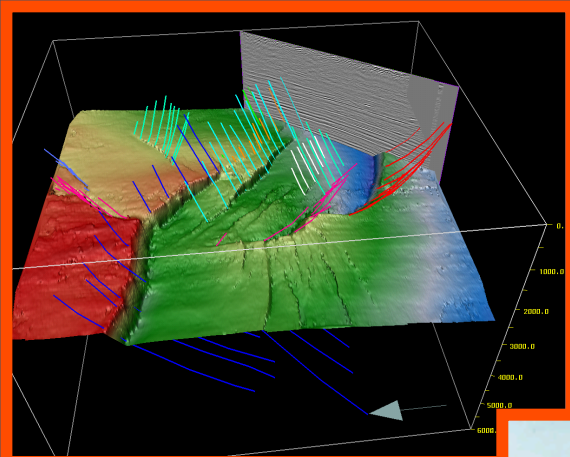
“What Geoscientist do”



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Visiting Geoscientist Program

What We Do in the Energy Industry



Production



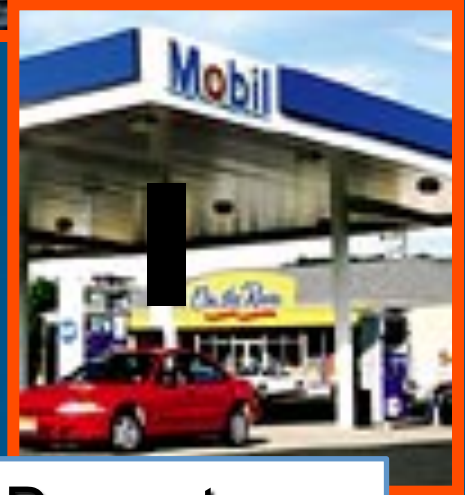
Marketing



Exploration

Upstream

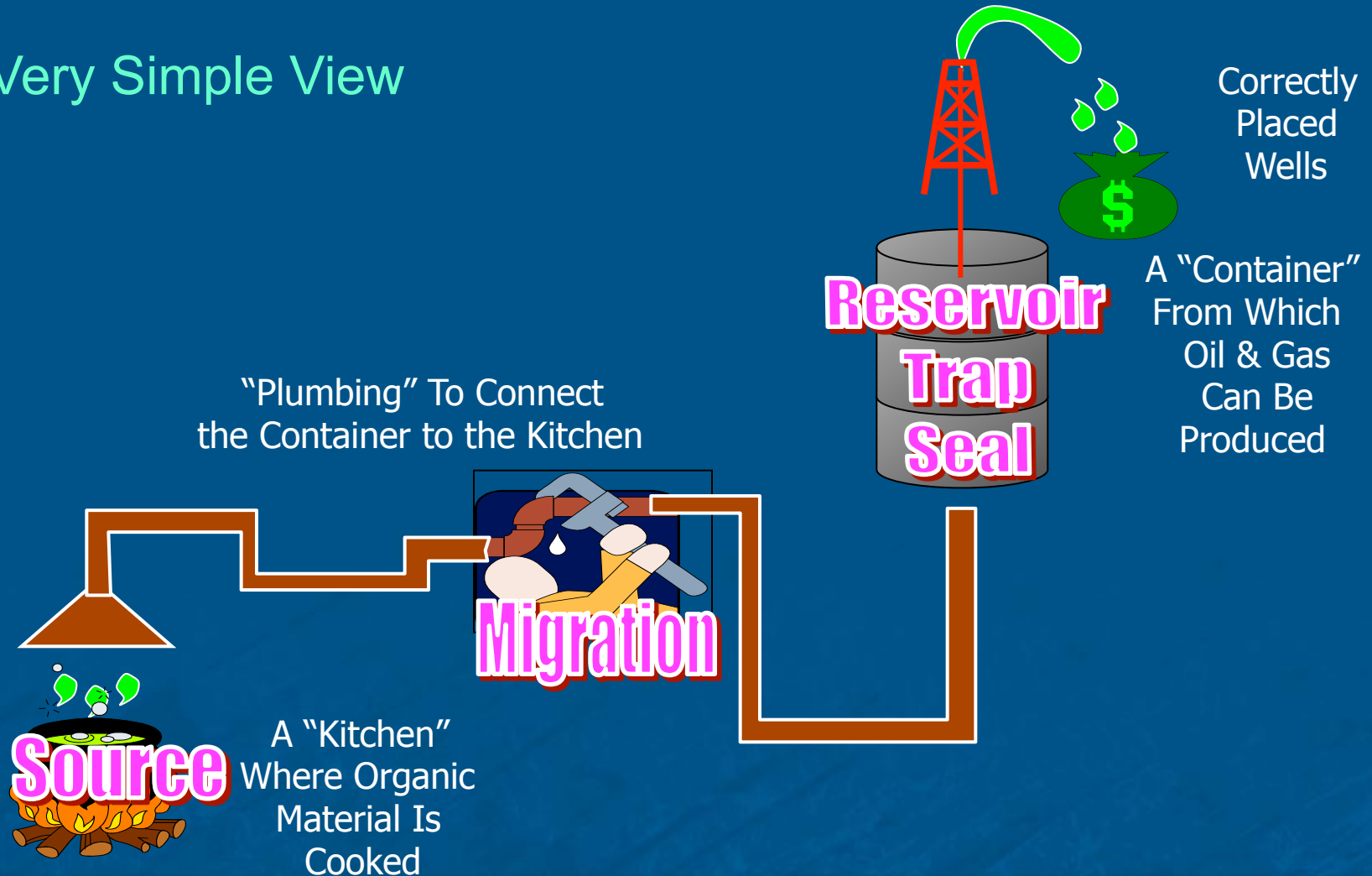
Refining



Downstream

What We Need for Success

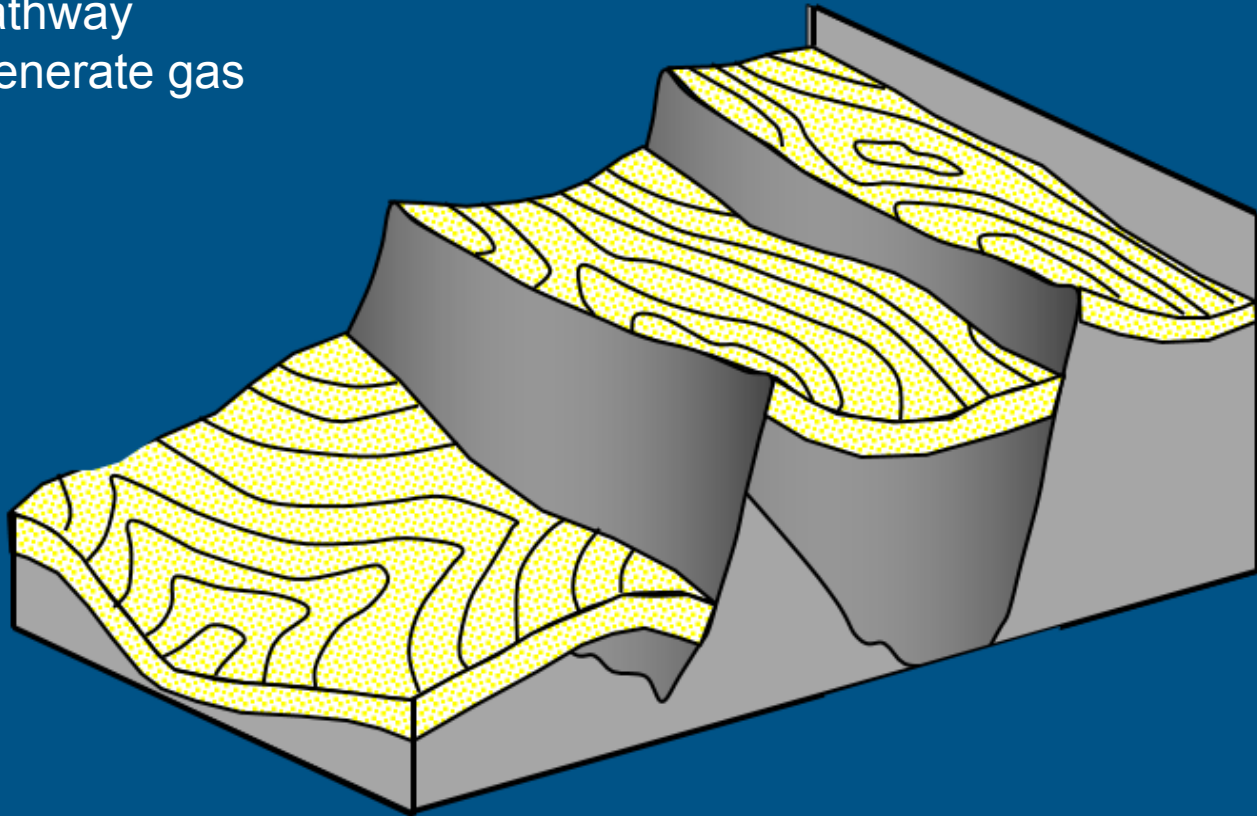
A Very Simple View



Example: North Sea

Brent Sandstone

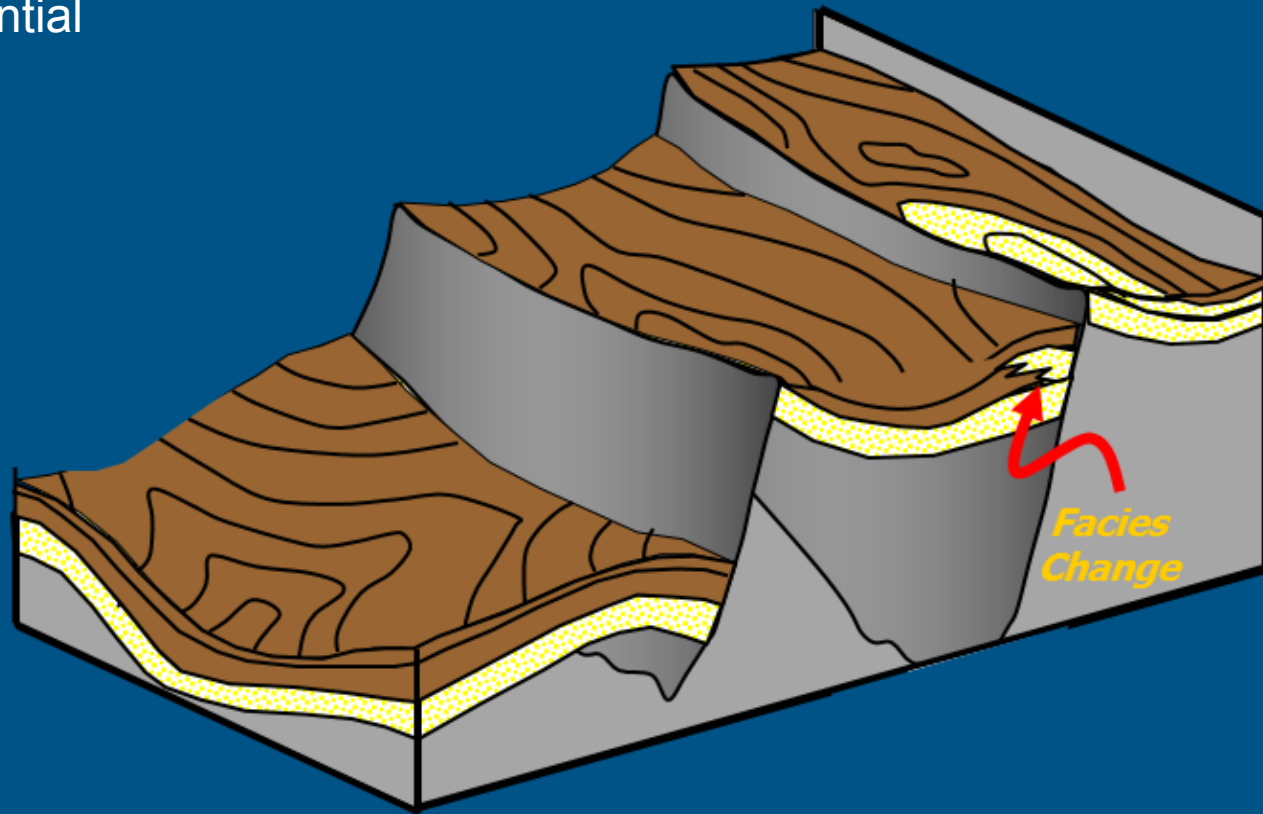
- Reservoir rock
- Migration Pathway
- Coals can generate gas



Example: North Sea

Heather & Sognefjord Shales

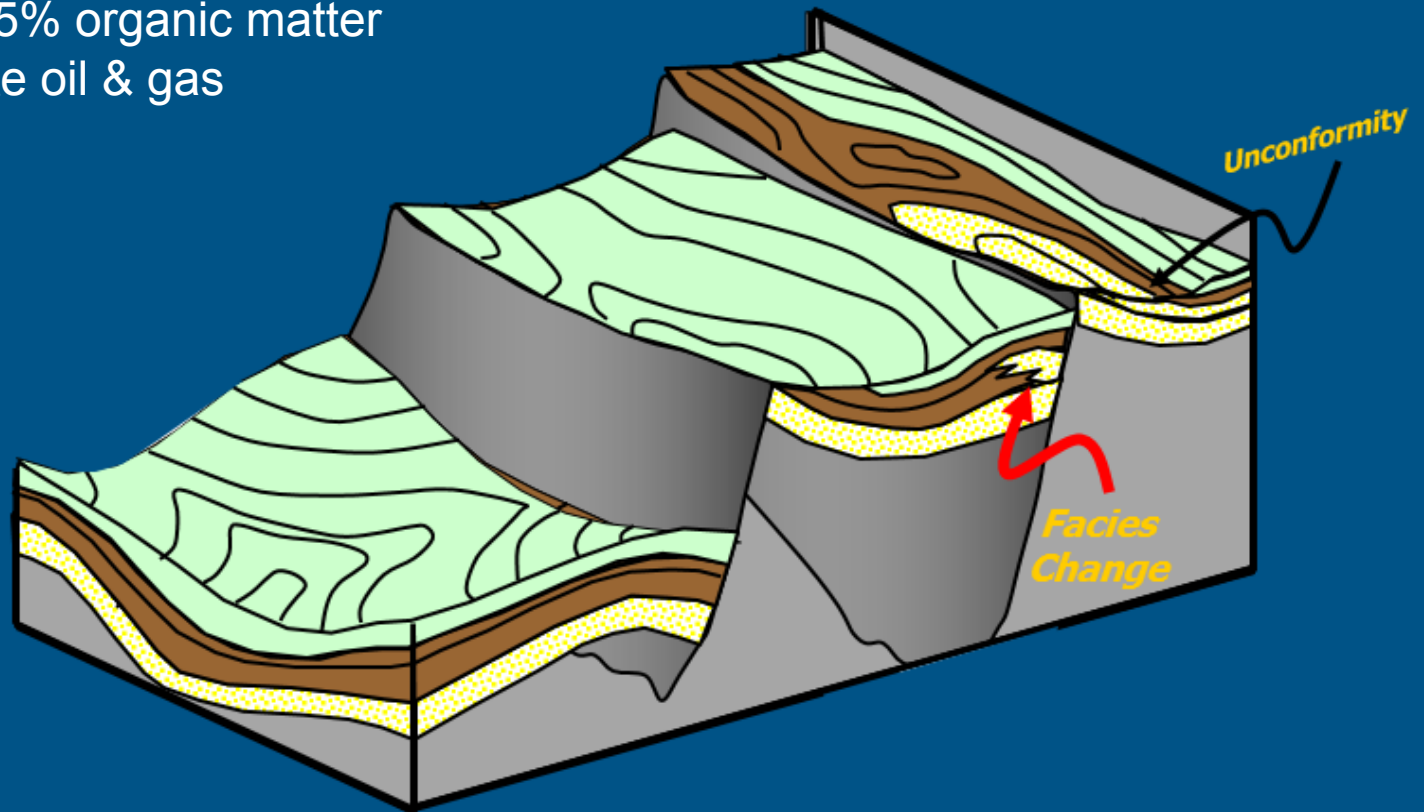
- Organic poor
- No HC potential



Example: North Sea

Draupne Shale

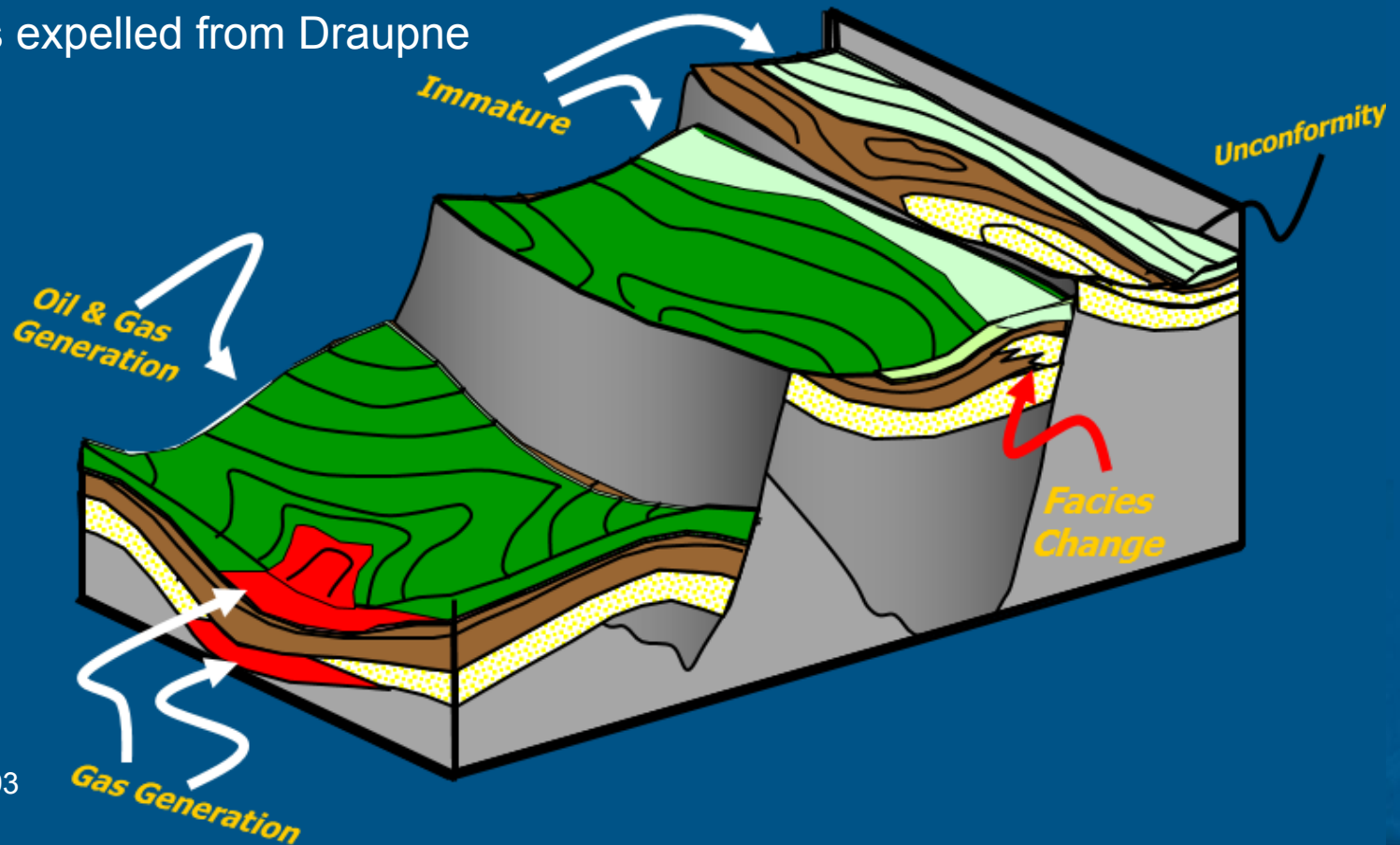
- Primary Source Rock
- More than 15% organic matter
- Can generate oil & gas



Example: North Sea

HC Generation & Expulsion

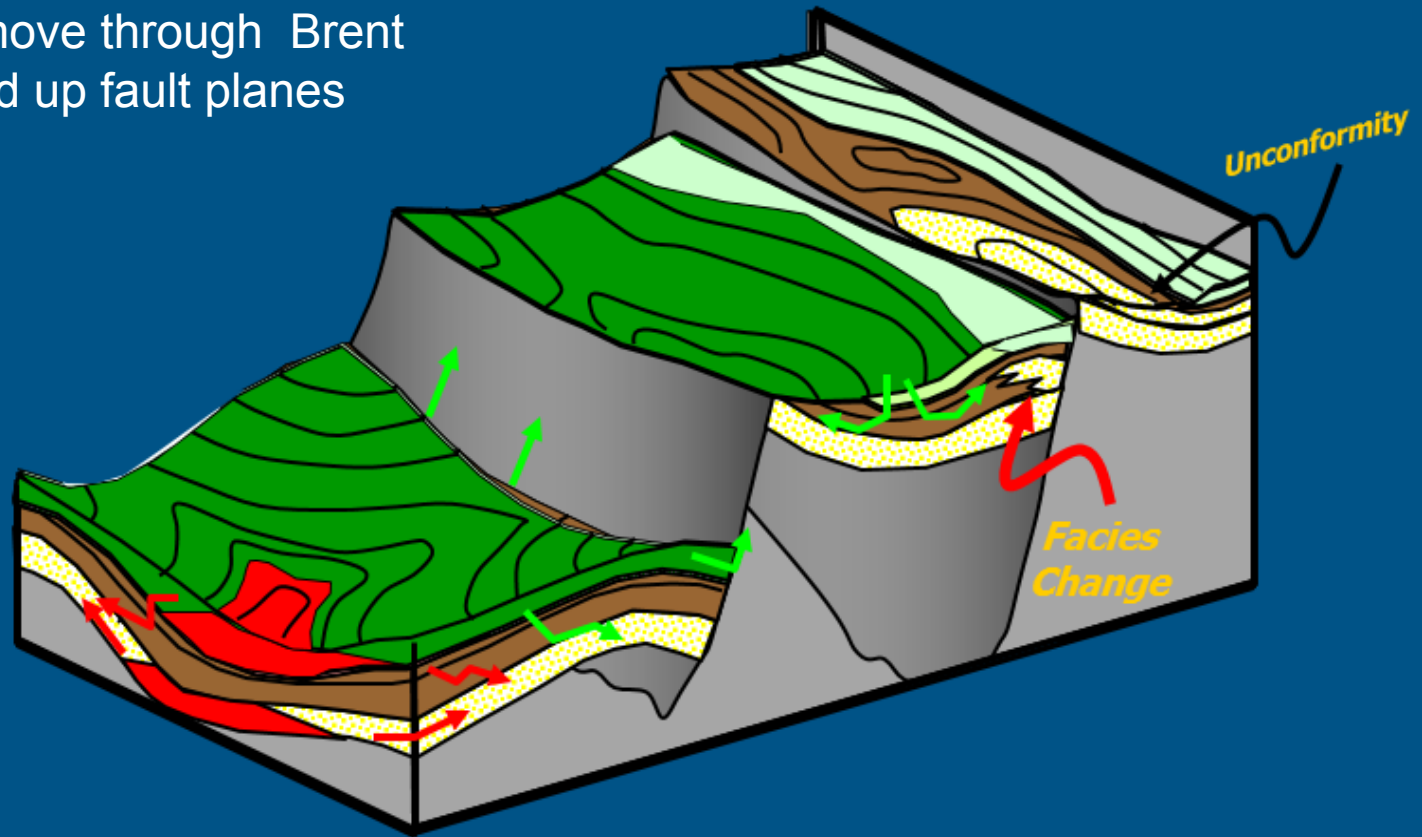
- Gas expelled from Brent Coals
- Oil & gas expelled from Draupne



Example: North Sea

HC Migration to Traps

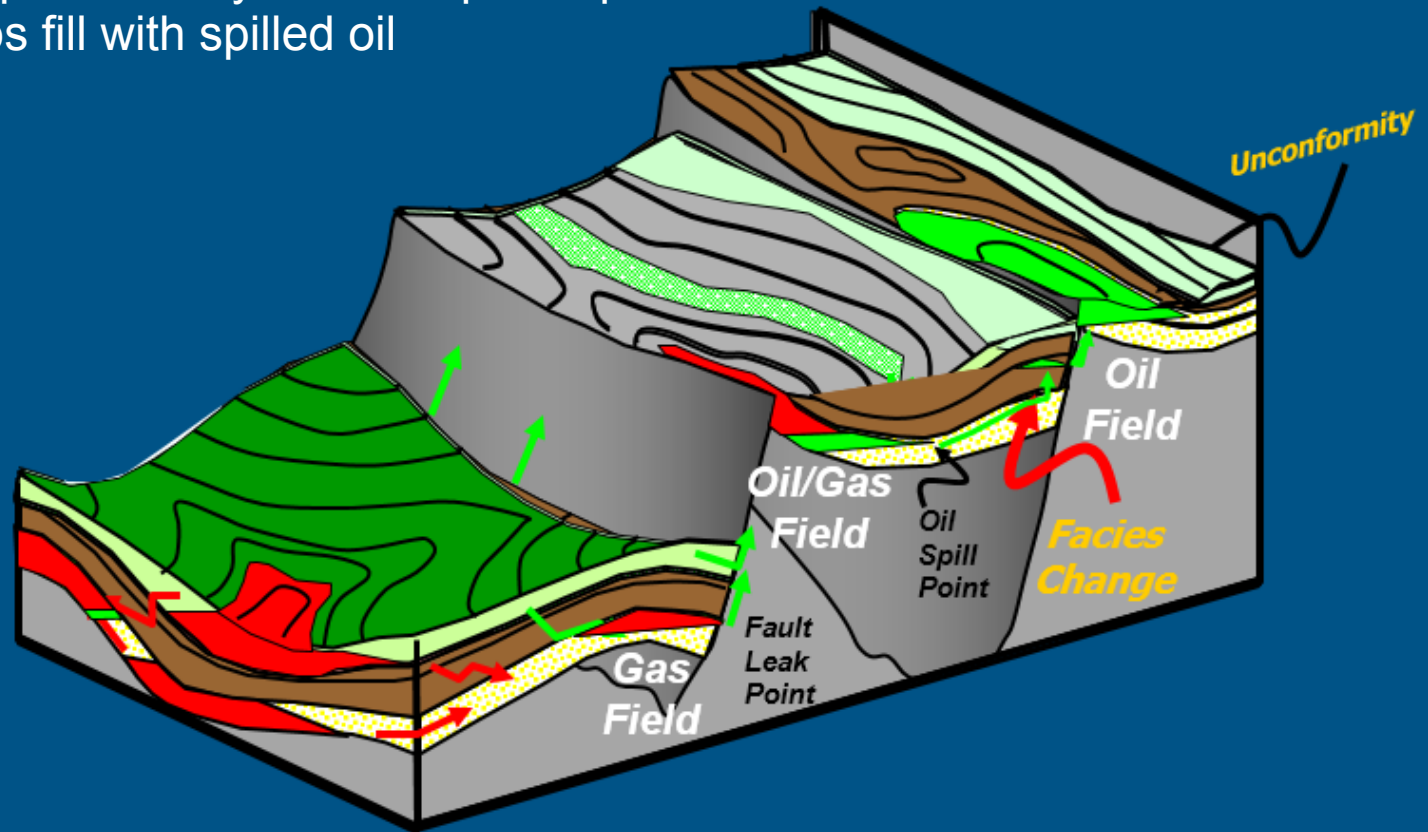
- Percolates into Brent sands
- Molecules move through Brent sands and up fault planes



Example: North Sea

HC Fill & Spill

- Late gas displaces early oil in deeper traps
- Shallow traps fill with spilled oil



Career Opportunities in the Energy Industry

Addressing the concerns of early professionals and
students

Additional Material

Anxiety during the downturn



AAPG

Visiting Geoscientist Program

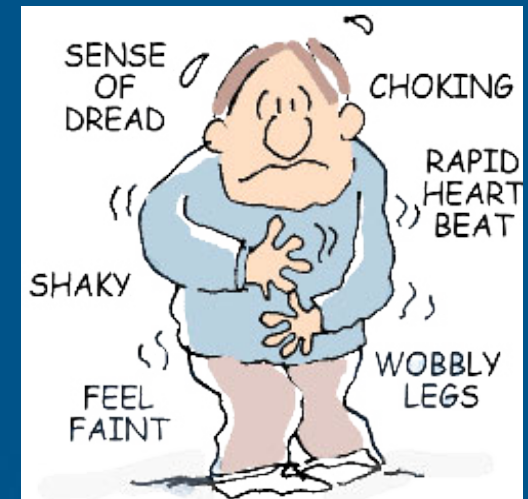
Uncertainty in the Oil Patch - How do you know you have anxiety?



Problems sleeping
Shortness of breath
Heart palpitations (racing heart)
Irritability
Nausea
Muscle tension
Inability to be still or calm

Unaddressed ongoing anxiety is

1. bad for your health,
2. bad for your relationships and
3. can lead to distraction on the job (refer to points 1 and 2)



Healthy ways of Coping with Stressful Situations

RELAX!

- Deep breathing
- Music
- Get a massage
- Practice Yoga
- Meditation (close your eyes, breath for 5 min)
- Soak in a hot tub!
- Escape – go to a movie, play a computer game, veg out a bit



Get Adequate Sleep – It is important to get enough rest.

Exercise Daily – it doesn't have to be a daily marathon, but do something.

Try and eat a healthy diet.

Think about yourself – Stay calm!



Healthy ways of Coping with Stressful Situations

- Do Your Best – Stop aiming for perfection. Just be proud of your accomplishments. All you can do is the best YOU can do.
- Accept that you can not control EVERYTHING! But you can influence how you respond to things.
- Put your stress in perspective. Is it really as bad as you think?
- Welcome humor. A good laugh goes a long way.
- Get involved – Volunteer, find ways to get involved in your community that gives you a support network and a way to process everyday stress.
- Talk to someone. Tell friends and family that you are feeling overwhelmed and that they can help.

