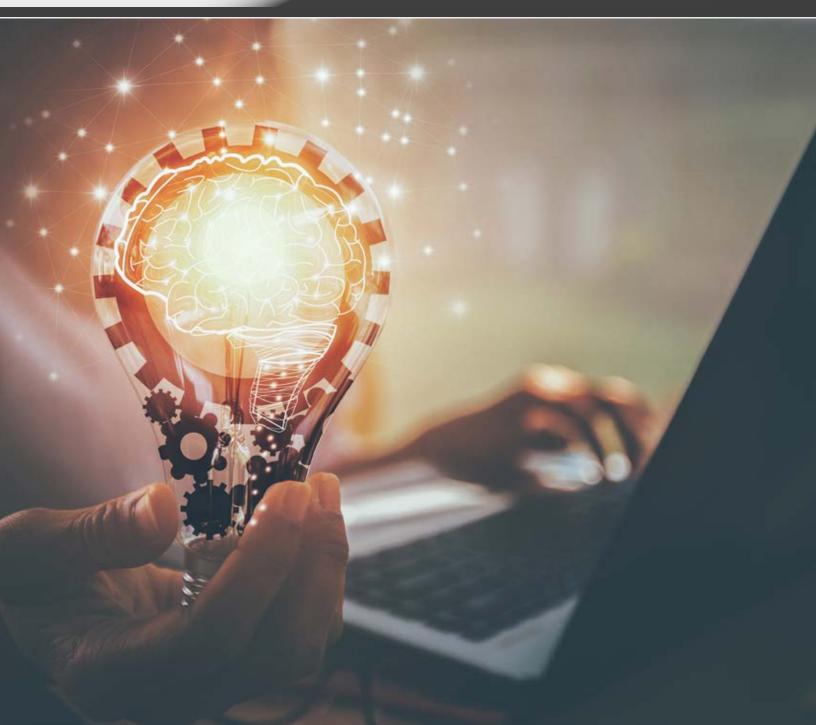


UPDATE

THE OFFICIAL PUBLICATION OF THE UTAH PETROLEUM ASSOCIATION

ISSUE 4 2020

FUELING UTAH'S GROWTH AND PROSPERITY





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FUELING UTAH'S GROWTH AND PROSPERITY

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This is the risk equation. The posture of a company's risk is a product of consequence, vulnerability, and threat. Many energy companies use industrial control systems and operational technology (0T). All companies use information technology (IT) - data - in their daily operations. These technologies work across the Internet which brings a heightened vulnerability factor into their risk equation.

12. INDUSTRIAL CYBERSECURITY: A CULTURE CHANGE

Reliable operational technology (OT) or industrial control systems (ICS) underpin every facet of American lives. Without them, our defenses, our economy, and our national security engine would grind to a halt — especially when so many of these systems are becoming "smart" and integrated.



14. GO OPPOSITE IN THE FACE OF UNCERTAINTY

Fracking, the Clean Air Act (CAA), the Clean Water Act (CWA), the Endangered Species Act (ESA) and the National Environment Policy Act (NEPA) are all regulatory policies that affect the petroleum industry.



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18. STRATEGIC COMMUNICATIONS

This effort was kicked off with the development of a new strategic plan which was approved by UPA member companies on the Communications Committee and the Executive Committee.

18. WELCOME NEW MEMBERS

18. SAVE THE DATE

19. UTAH PETROLEUM ASSOCIATION OIL A ND GAS CLASSIC

We hope you will join us for the UPA Oil and Gas Classic on Thursday September 10, 2020. This is our most attended event of the year, so don't miss out! We understand the challenges we have all faced over the last few months with the drop in crude prices and the pandemic, but we are hoping that this will be a springboard of future success for you and the industry.

20. EIA'S VIEW OF THE IMPACTS OF COVID-19 ON THE ENERGY INDUSTRY

The statement of Stephen Nalley, Deputy Administrator, U.S. Energy Information Administration, U.S. Department of Energy, before the Energy and Natural Resources Committee, U.S. Senate, June 16, 2020.

23. MEMBER UPDATE: COMMUNITY GIVING





THE NEWSLINK

Who We Are

Misson Statement

The Utah Petroleum Association (UPA) is a Utah-based, statewide petroleum trade association representing companies involved in all aspects of Utah's oil and gas industry. We exist to serve our member companies and advance the responsible development of Utah's natural resources and manufacture of fuels that drive Utah's economy.

Executive Committee



UPA Administrative Staff & Office



Rikki Hrenko-Browning, President



Jennette King, Administrative Assistant

President's Message **Rikki Hrenko-Browning**



Dear UPA members and friends,

e are now more than halfway through the year 2020. For many, myself included, I suspect this is unnerving, but also equal parts a relief as plans and goals we were striving toward have been placed on hold due to the impacts of COVID-19. Time has quickly slipped away as we jolt from one immediate challenge to the next. While disappointed in what the sum of 2020 is likely to bring, I suspect we are also relieved that hopefully the worst is behind us (and I promise I'm not trying to invoke a curse by putting those words down in writing) so that we can reset our targets moving forward.

Passing the middle mark of the year snuck up on me, and so this publication offered the perfect opportunity to pause, take stock, and plan for what lies ahead as we consider how to not only be successful, but be more resilient for whatever is in store ahead. I understand the horizon can be hard to see beyond the imminent storms, but I hope you can also find the opportunity to pause and reevaluate. In our doing so, risk management emerged as a fitting theme for this edition.

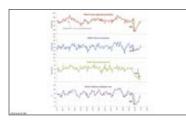
Inside you'll find a number of guest editorials focusing on various elements of security and risk mitigation in the oil and gas space from "Operational Technology" and "Understanding and Solving $R = C \times V \times T$ " to "anticipatory leadership" tips. Similarly, within UPA we have recently transitioned our Process Safety Management Subcommittee to the Risk Management Subcommittee to provide for a focus and forum on both PSM and OHS issues, recognizing the fundamental risk management interdependencies.

At a more strategic level, hopefully you have noticed more activity on the communications front. Inside you'll find more on why we think enhanced communications will be vital to the future of the industry and the core messages forming the foundation of our efforts. Winning hearts and minds and developing recognition of the value of our industry will take time. Despite the headwinds we are all facing, UPA is keeping our focus on that overarching mission critical goal. We also haven't lost sight of our commitment to listening to and supporting the communities in which we operate. With each edition, we're excited to highlight some of the ways our industry is engaging as a trusted contributor to our communities.

As an industry, we are making solid progress on a number of fronts. The Environmental Partnership's recently released 2020 annual report shows a tripling of membership in its first two years, and I am proud to say includes a number of UPA's members. Similarly, the Oil and Gas Climate Initiative members recently set a joint target to curb the carbon emissions from their upstream operations, electricity and steam by 36 million to 52 million metric tons per year by 2025. These are just a few examples of our tangible and impressive progress on emission reductions. Let's focus on these and similar successes to prove the oil and gas industry is committed to working as a trusted partner in crafting Utah's energy future.



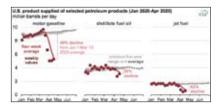
OVID-19 has resulted in the lowest U.S. petroleum consumption in history. The U.S. Energy Information Administration (EIA) has charted the previous five-year U.S. consumption range, and then the COVID induced demand drop compared from the beginning of the year, showing bottoming-out demand in March and April. EIA estimates motor gasoline consumption has declined the most, falling 40% nationally (43% in PADD 4 - the rocky mountain region, Utah, Colorado, Idaho, Montana and Wyoming), and is responsible for more than 50% of the total petroleum product demand drop. U.S. consumption of jet fuel has experienced the largest drop in relative terms, 62%, but was particularly hard hit in PADD 4, declining 84% at its peak. The decline in distillate or diesel fuel consumption has been less severe, about 20% lower than at the beginning of the year (only 16% in PADD 4), and that's because diesel fuel is predominantly used for trucking, locomotive and agricultural sectors. Continued demand for distribution of food, medical supplies, and increased home deliveries and e-commerce contributed to the relatively stable demand.



At the same time, the industry was simultaneously faced with a supply shock as OPEC and Russia tried to use the demand challenges to their geopolitical gain. That combined demand nosedive and global flooding of the

market on the supply side drove prices to historic lows, even resulting in oil futures dropping to nearly negative \$40/bbl on April 20th. Here in Utah, this resulted in crude production declines of more than 15% (from 89,300 barrels of crude per day to 75,500 barrels per day) by April. There is roughly a two month lag in publicly available production data, and we expect to see further production declines reflected in the May and likely June data, but hopefully less severe. However, it's important to keep in mind that Utah has one of the more integrated energy industries, with limited out of state crude supply and finished product coming into the state (two crude pipelines and one finished products line coming in). As such, the Salt Lake refineries have made multimillion dollar investments that are geared specifically toward processing Utah's waxy crudes, which will help stabilize the upstream sector as we look toward recovery.

Thankfully, we are starting to see indicators that this recovery is slowly coming into view. The SLC refining utilization rate is usually around 90-95%,



but with the nosedive in demand and storage filling up, refineries across the U.S. had to ratchet down production. As shown, PADD 4 was reporting a low in utilization at ~60%

in late March, and has since increased up to roughly 85% at the beginning of July. As the economy reopening drives demand, refinery utilization is ratcheting back up and supporting recovery of crude production. While crude pricing isn't expected to return to January levels in the near term, fundamentals are moving in the right direction.

In addition to responding to COVID-induced operational changes and swiftly changing economic drivers, our downstream members are also grappling with multiple new rulemakings, several of which could have significant long-term impacts. We have recently submitted comments on the Division of Air Quality's Penalty Rule and the proposed 2020 UDAQ Monitoring Plan. We are also engaged on PM 2.5 Offsets and stack testing rules. The SLC refinery community has already made significant investments in air quality, resulting in reductions of 93% SOx and 62% VOC. Voluntary investments into Tier 3 fuels production will further drive down vehicle emissions. We remain committed to balanced and targeted measures to help solve the air quality challenge.

Suffice it to say that the state's energy industry is carrying a heavy burden during this economic downturn. However, a silver lining could be that this crisis has highlighted the industry's value to the state of Utah and its communities - the oil and gas industry delivers energy that keeps the state moving, powers homes, keeps store shelves stocked, fuels critical infrastructure and first responders, and represents valuable revenue many state programs depend on. Recent developments remind us that benefits (to state and agency budgets and local communities) associated with a thriving energy sector are not guaranteed and should not be taken for granted. I'm incredibly proud of the role the state's oil and gas industry has played in delivering critical infrastructure through this crisis and pandemic. Access to affordable reliable and clean energy drives Utah's community and is an essential part of our every day life. While the current circumstances are very difficult and impactful, our natural gas and oil companies have proven themselves as nimble and innovative in challenging times. We have weathered downturns before, and I am confident that we will do so again.

Upstream Updates

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he churn of slow and steady movement through the rulemaking process continues for our producers, both with the Division of Oil, Gas and Mining (DOGM) and the Division of Air Quality (DAQ). There have also been a number of upstream legislative discussions; see the legislative update for details.

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In June, DOGM briefed the Board of Oil, Gas and Mining on six rulemakings. Forced Pooling, which has been years in the making and a high priority issue for UPA, was recently finalized and became effective on June 1. Thanks goes out to all of our operators and supporters on their engagement in this major milestone, but especially to Fred MacDonald, now with Lear and Lear, for leading UPA's position in front of the board. Also nearing conclusion is Operatorship, which was published in the Utah State Bulletin on June 15th, following several months of informal rulemaking again including significant UPA engagement. Final comments were due July 15 and the board is likely to approve the final rule at their July 22nd hearing and the rule is expected to be effective by the time this is published. The current focus has now shifted to the oil and gas penalties schedule following passage of SB 148 last year, giving the division and board the ability to levy and collect fines. Recall that UPA supported the division on this legislation as a response to the November 2019 legislative audit. As presented by Director Baza to the board in June, the division's target is to enter formal rulemaking on the penalty schedule at the August 26th board meeting in order to meet the statutory November rulemaking timeline.

Also on deck are three additional new rules: bonding rules (slated for formal rulemaking in September), horizontal rules (targeted for formal rulemaking in December) and seismic exploration rules (planned for Q1 2021). Due to COVID related demand drops and spring oversupply, we are facing long-term depressed prices, resulting in corporate restructuring and layoffs. Corporate resources to prioritize these rulemakings are stretched thin and the likelihood of significant new development in the near term is very low, raising a question as to the urgency and priority with which these rules should progress, given the current challenges the industry is navigating. UPA will continue to engage with the division, board and legislature to impress upon the importance of regulatory certainty and ensuring that the constant parade of new rulemakings doesn't harm the competitiveness of and investment into Utah's world-class resource.

Similarly, there are multiple new rulemakings active with the Division of Air Quality (DAQ) that impact both our upstream and downstream members. For our upstream members, R307-150 Emissions Inventory Rule Changes was voted to formal rulemaking in June, is being moved forward to implement a requirement of the Clean Air Act (CAA), and requires an annual emissions statement for non-attaining areas (the Uintah Basin and Wasatch Front). While progressing this rule is necessary, UPA has concerns with implementation details and will be commenting prior to the August 3rd comment period. Also voted to formal rulemaking in June was R307-102 — Penalty Assessment, which would allow the Department to charge varying fees that could include, for example, annual base fees; varying fees for different source sizes, types, and pollutant classes; and administrative fees. UPA is further evaluating this rule, which also has an August 3rd comment period deadline.

The pace of new rulemaking affecting the oil and gas industry has been swift, both nationally and within the state. UPA will continue advocating that now is not the time to change the rules of the game. Some of these rulemakings have legislative timelines or timelines dictated by EPA and certainly those should progress as needed. Other rulemakings, such as changes to bonding requirements and fees schedules, have the potential to considerably increase costs and seem to be out of touch with the reality that most of our operators are grappling with today. Unless there is an urgent need to progress a new rule, we support pausing until the COVID response and unprecedented challenging economic environment has started to recover, operators have adequate resources to thoroughly engage, and we can ensure that we are not driving valuable investment in our energy resources out of the state.

While rulemaking has certainly been top of mind, UPA has also been an active participant in the Office of Energy Development's Oil and Gas Working



Group, consisting of a broad group of stakeholders (OED, UGS, DOGM, SITLA, operators and others) to evaluate how best to respond to the current market challenges and support the industry. Similarly, DOGM held its first virtual Uintah Basin Oil and Gas Collaborative Meeting, which you can see at https://www.youtube.com/watch?v=qZnsh8tXtLs UPDATE



hile the summer months are typically slower for the legislature and those of us actively engaged in government affairs, this summer and the summer of 2019 have been exceptions. The summer of 2019 was spent in public meetings regarding a planned widespread tax overhaul, and engaging on how to expand the state's tax base without tax pyramiding. While that tax reform ultimately was repealed in the first days of the 2020 general session, this year also hasn't seen a reprieve. We are currently looking ahead to the August special session which will be the sixth special session of the year, following sessions in April and June, some of which were called by the Governor and some were initiated by the legislature themselves — marking the first time they have used this new power, and all of which have been conducted at least partly if not fully remotely. The focus has of course been on coronavirusrelated budget cuts and other pandemic impacts.

Typically, from May through November, the legislature meets in interim committees to discuss topics coming out of the previous session or anticipated to be addressed during the upcoming session and agreeing to an interim study

list. Not all items on the list will be studied, but at the prerogative of the Committee chairs, most typically receive a hearing or discussion, though no guarantee of draft legislation for the next general session. A summary of highlights from the June interim meetings is available and UPA's legislative committee is closely following or engaging on a handful of items in the Natural Resources, Agriculture, and Environment Interim Committee (NRAE); Public Utilities, Energy, and Technology Interim Committee (PUET); the Revenue and Taxation Interim Committee: and the Economic Development and Workforce Services Committee. During the June interim meetings, UPA had an opportunity to address the status of the oil and gas industry and possible regulatory considerations to both NRAE and PUET. We also presented to the Clean Air Caucus on various downstream issues including Tier 3 Fuels and the air quality challenge of ozone along the Wasatch Front. We appreciate the legislature's willingness to partner on solutions, recognizing the challenges our oil and gas industry is facing and its importance to the state. Given the tax issues still swirling (keep an eye on the Rev and Tax Committee's review of sales tax exemptions and a rehash of tax pyramiding and taxes on services) and the long-term perspective on COVID, we are prepared for the marathon ahead on the legislative front.

Utah's 2020 Gubernatorial Race



lection Day in the U.S. is scheduled for Nov. 3, 2020, when voters in Utah will vote for president, select a new governor and make other decisions. The last Democratic governor in Utah was Scott M. Matheson. Utah's long string of Republican governors, dating back to January 1985, has lasted 35 years now. It is the second-longest active streak of leadership by one party in the U.S. (South Dakota has first place: Governor Harvey L. Wollman, a

Democrat, left office there in 1979.)

Spencer Cox is Governor Herbert's lieutenant governor and, because he is a Republican, he is the expected choice for Utah's next governor. He and his wife both grew up in Fairview, Utah. Spencer is a lawyer who worked at Fabian and Clendenin in Salt Lake City. He and his wife moved back to Fairview to raise their children. Spencer served on the city council there and was elected its mayor before moving into the state political scene. During the entire time he has served as lieutenant governor, he has commuted regularly between Fairview and Salt Lake City.

In June, UPA joined with other heavy industries (the Utah Manufacturers Association, Utah Mining Association and Association of General Contractors) to host a "Heavy Industry Forum" event to focus in on the Gubernatorial candidates' positions on issues directly impacting our industries and often not part of the mainstream debates. We have highlighted some of the Lt. Governor's (and prevailing GOP candidate) statements.

Tier 3 Gas

I am interested in cleaning up Utah's air. That means cleaning up tailpipe emissions, which is one of the major contributing factors to poor air in Utah. Our refineries are now producing Tier 3 gas, which will make a big difference. So many workers are working from home right now, it has improved the air in Utah and can be used as a tool to continue improving air quality going forward.

Technical Training

Education has been separated from work for far too long in Utah. We've also made a culture where every child needs a bachelor's degree. That is bad for the child and bad for Utah because it means young people are not prepared to work after they graduate from high school. We need to upgrade technical training and increase funding for post-second-ary education. We need to pay attention to what employers need.

Regulatory Certainty

Utah has had economic success over the last 20 years because it has been competitive. A lot of energy development is done on federal lands. When capital is tight, if businesses have to choose, they choose places with regulatory certainty. It shouldn't take seven years to get a permit. Our regulatory scheme should be competitive with other places. That means it can't be overly burdensome or time-consuming. We need to participate with industry and make sure supply chains are kept open. We need to protect the constitutional rights of companies to conduct business across state lines. That means pushing back with litigation when necessary.

Business Incentives

I was pushing back on business incentives early because it doesn't make sense when unemployment is low or when the company is going to move to Utah anyway. Most incentives come to the Wasatch front, but some counties in other parts of the state have struggled with recession since the Great Recession. Those are the places that need support, and I want to restructure opportunities accordingly.

Rural Utah Needs More Involvement in Decisions

I am often the only representative from rural Utah who is in the room when decisions are being made. I have often wondered what happens when I am not in the room. As a result, I plan to pull in people from rural Utah and give them a voice.

Remote Work Opportunities Benefit Everyone

People who move here are worried about buying a house, educating their children and breathing the air. Bringing in people from out of state and incentivizing them to live in rural Utah makes it easier for everyone to have a higher quality of life.

The Best State for Business

Utah has been the best state for business in six out of the last nine years. I plan to continue that legacy, but as someone from rural Utah, I bring my blue-collar background with me, and that informs my perspective. It isn't something I adopted to get votes. It is part of my identity. I want to put protections into place for industries that will bless the generations to come. I want Utah to be the state for heavy industry.

The Utah Gubernatorial race is down to two candidates, Lt. Governor Spencer Cox and Democrat Christopher Peterson. Before the primary election, the Utah Heavy Industries hosted a 2020 Gubernatorial Forum, and while all three of the GOP candidates conceded, the forum is still informative on positions and thoughts of Lt. Governor Spencer Cox. Scan the QR code to watch the forum highlights video.



https://www.youtube.com/watch?reload=9&v=BtUka1Cco5Y&feature=youtu.be

Understanding and Solving $R = C \times V \times T$

his is the risk equation. The posture of a company's risk is a product of consequence, vulnerability and threat. Many energy companies use industrial control systems and operational technology (0T). All companies use information technology (IT) — data — in their daily operations. These technologies work across the internet, which brings a heightened vulnerability factor to their risk equation.

As one of the most consequential sectors of critical infrastructure, the energy sector is a true lifeline sector. Businesses working in the energy sector need to diligently manage their risk to disruptive cyber threats because there are nation-state actors such as China, Russia, Iran and North Korea that are attacking U.S. infrastructure through cyberspace every hour of every day. Phishing attempts are the No. 1 vector for these attacks. Opening the wrong attachment, or clicking on the wrong hyperlink, can deliver malware into a computer and then the attack is successful and underway.

Bad actors employ the concept of "social engineering" to deceptively manipulate workers into falling for these ploys that then deliver innumerable exploits into a computer, into a system and possibly into numerous networks. The "carpet bombing" cyber-attack is incessant, and I recommend all companies provide training to any worker using the internet to mitigate their risk to phishing schemes. Employees aren't trained to suspect this type of disruption, but we are working in a new digital age that relies on internet connectivity and associated technology more than ever, and we likely won't be going back to business as we did it prior to this. So, dot on the exclamation point for the importance of cybersecurity training in the general workforce.

An additional aspect of cybersecurity ties to the supply chain that supports Information and Communication Technology (ICT). We've all heard it said that any chain is only as strong as its weakest link. If vulnerabilities in the ICT supply chain are exploited, the consequences can affect all users of that technology or service. ICT products and services provide remote access into work environments, e-Learning capabilities, mobile computing and include hardware, software and managed services from third-party vendors, suppliers, service providers and contractors.

As the nation nears the general election in November, our national cybersecurity experts at the DHS Cybersecurity and Infrastructure Security Agency (CISA) warn that cyber-attacks will escalate. With so much work being done in cyberspace, it's easy to see that the attack surface is larger than ever. This reality should prompt risk managers to focus on cybersecurity right now before the cyber-threat landscape worsens.

So, with that emphasis, how can companies manage their cyberbased risk?

There are two strong resources I'd recommend to petroleum energy companies. First is the ONG Information Sharing and Analysis Center (ONG-ISAC), which provides shared intelligence on cyber incidents, threats, vulnerabilities, and best practices to enhance security in the ONG industries.

Second would be CISA. Specifically, I'd suggest companies tap into their information streams such as The National Cyber Awareness System (NCAS) (https://us-cert.cisa.gov/ncas). The difference between the two is that the ISAC charges a subscription fee, and the NCAS does not.



https://us-cert.cisa.gov/ncas

I'd also encourage companies to undertake a cybersecurity assessment. CISA offers several types that are free. These range from do-it-yourself to those best provided by one of their experts. I'd direct anyone to https://www.cisa.gov/cyber-resource-hub and encourage them to find the assessment that best suits them. One additional resource I'd recommend is the Cyber Essentials Toolkit at https://www.cisa.gov/ publication/cyber-essentials-toolkits.



Aside from the cyber threat what other risks should businesses be thinking about?

I manage critical infrastructure risk in Utah across three broad categories: natural hazards, technological hazards and man-made threats. We are well-aware



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The cyber threat is today's primary man-made threat to businesses. However, I'd remind companies working in the energy industries that as you see workforce reductions, you should plan for how you might need to manage the disgruntled employee.

of the natural hazards of seismic activity, flooding and even severe weather. In today's just-in-time management philosophy, an earthquake disrupting the pass-ability of I-15 or I-80 could be catastrophic. These roadways are critical to the national security and economy, and as the crossroads of the west, they are essential to the movement of commodities and essential products from the West Coast into Utah and to the rest of the country points east. Companies that are analyzing how these natural hazards could disrupt their critical operations are finding ways to mitigate those vulnerabilities. That's sound risk management.

Managing technological risk can be as simple as preparing for a power outage. Should a company have a backup generator? Lock down a fuel contract to refuel that generator? The internet has become a business necessity. If the internet goes down, this can disrupt IT and OT, as I mentioned before. It can affect billables, payables, maybe phone systems and much more.

The cyber threat is today's primary man-made threat to businesses. However, I'd remind companies working in the energy industries that as you see workforce reductions, you should plan for how you might need to manage the disgruntled employee. That's essentially an insider threat that may cause a lot of problems unless you've anticipated those and have made plans.

The last thing is that you don't have to reinvent the wheel when considering how to manage any of these things. Our office can help. CISA can help, and your local emergency management office can help. I would encourage every business to plan and plan well, because it's not a question of if you will need a risk management plan, but when.

If interested in assistance or more information Matt Beaudry can be reached at mbeaudry@utah.gov



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Andustrial Cybersecurity:

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eliable operational technology (0T) or industrial control systems (ICS) underpin every facet of American lives. Without them, our defenses, our economy, and our national security engine would grind to a halt — especially when so many of these systems are becoming "smart" and integrated. Securing infrastructure requires a culture change that prioritizes cybersecurity at the employee and organizational levels. OT is associated with information systems, devices, sensors, and equipment that are connected across a network (similar to information technology, or IT) but include the unique ability to interact with the physical world. Examples can include systems that support power generation and distribution, manufacturing, water treatment, chemical processing, oil and gas, weapons platforms, transportation and logistics, and building automation.

OT systems are often associated with critical infrastructure, and securing them requires a different approach than traditional IT systems. Today's industry is built upon yesterday's infrastructure, technology, and networks, and as a result, not all OT systems are identical, nor do they have the same security in design. Often, OT systems represent a mismatch of obsolete and legacy technologies with infrastructure built before the modern internet or even commonly used operating systems. OT systems are commonly integrated with newer systems that are subsequently retrofitted with the latest advancements. In addition, incorporating OT with other operational designs such as conditional alarms, hard-wired configurations, and process interlock strategies creates additional network differences. These operational characteristics will require different security configurations tailored specifically to each facility. Therefore, it's not applicable to develop an "off the shelf" or a business enterprise traditional IT solution as it will not fit the unique architectures for the majority of OT systems. Convergence of IT and OT will be the new reality. Modern control systems and technologies have evolved from simple analog sensors, such as a temperature sensor, to fully automated and integrated manufacturing facilities, safely running multiple simultaneous complex operations.

Typically, OT systems are architecturally designed to monitor their environment and automatically interact based on detected changes. Changes are discovered through remote sensors, reacting to predefined conditions, but also through data analysis and predictive algorithms. When compromised, the results can be personal injury (including loss of life), environmental contamination, or real damage of property. Consequently, there isn't a quick reboot to the common computer glitch. Operations must be sustained, and maintenance needs to be scheduled and coordinated in advance. Furthermore, OT systems cannot tolerate an interruption in dataflow, and some cybersecurity solutions are too intrusive or restrictive and can knock OT systems offline. As a result, the design focus places greater emphasis on availability over system confidentiality or data integrity. Since the potential consequences of conventional IT tools can hinder, cause failure, or even compromise an OT system, the accepted solution is to reduce the priority of cybersecurity or attempt to separate the systems. However, the important strategy is risk mitigation. Addressing known vulnerabilities and improving the cybersecurity of critical systems or infrastructure — and therefore making these systems more adaptable, resilient and reliable — can help bolster key components of the nation's security in the energy sector. As the need continues for superior security and efficiently connected OT systems that have availability requirements as the priority, company leaders will need to better understand their environments and be able to predict technology interactions. In order to understand one or more technology interactions, security, efficiency and communication networks, while still managing limited resources, organizations are turning to advance risk mitigation strategies to accomplish their understanding.

To be successful with cybersecurity implementations, corporate leadership must own and prioritize cybersecurity initiatives for the organization. Top level support is a must for all levels of management to implement the needed culture changes across all team members and staff. This necessary change is analogous to the safety culture changes and efficiency changes with Six Sigma that accelerated during the 90s through the turn of the century.

To achieve site wide adoption, organizations must adopt cybersecurity risk evaluations as a part of process hazard assessments (PHA/PSM) which will quantify the potential risk. By understanding and documenting the risk, organizations are better suited to set priorities, resources, and decisions for cybersecurity initiatives.

Traditionally, energy and process manufacturing industries leverage risk assessments that evaluate consequence versus frequency measured across key impact areas to include health/safety, community or social media, environment and business. However, moving forward in today's information and data age, cybersecurity needs to be included as part of the process control domain (PCD). An example of a risk matrix is captured in Figure 1.

After an organization can measure the risk, leadership will be better positioned to implement the necessary cybersecurity controls to either mitigate or transfer the associated risk. Key areas to consider during the development of the cybersecurity program should include:

- Cybersecurity policies and procedures
- Enhanced employee cybersecurity training
- Vendor relations and 3rd party risk management to include supply chains
 Internal cyber assessments
- Cyber and network security as a part of plant maintenance and plant shutdown schedules
- External media use
- Access management, both physical and virtual, to sensitive areas (Logic control cabinets and control rooms)
- · Cyber implications with safety systems and process interlocks
- Company data (PII, HR, financial, legal, trade secrets)

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	IV	Level 1	Level 2	Level 2 Level 3 L		el4	Level 5		Frequency Category		Definition		
k		III Low		Level 2	Level 3		Level 4		А		Very unlikely, not expected to occur at this facility, expected to occur at a refinery somewhere less		
		LOW	Level 1								than once every 10 years (<1/10000)		
Consequence	П	II Low Low		Level 1	Leve	el 2	Level 3		в		Not likely to occur in life of this facility, expected to occur once per year at a refinery somewhere (1/1000 to 1/10000)		
ence	Ξ.	Low	Low	Low	Low Lo		Level 1		0	:		r once in life of this facility, expected to per year at refinery in the USA (1/100 to 1/1000)	
		A	в	с	D	þ	E		D		Likely to occur at this facility once every 10 years (1/10 to 1/100)		
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			Consequence					Considerations					
	\ H (A)		Category	Health/Saf	fety Commun		ommunity	Environm	ental	E	lusiness	Cyber	
				No Onsite Injury to First Aid or no injury to Public		No to Minor Impact to People or No media coverage		or No agency or no resp	o Reportable Quality r No agency contract or no response needed		to \$100K	No to PCD exposed to external networks or technology is internal or well known	
			"	Onsite Recordable to Lost Time Injury or Nuisance to Public		Community Warning or Local Media Coverage		Reportable Q with Age Notification o Duration Rem	ncy or Short	\$100	K to \$1MM	PCD network exposed to L4 environment or internal Purdue model bypassed or technology is 3rd party* contracted	
				Permanent Disabling Injury to Single or Multiple Fatality within the immediate area or Medical Treatment to Public		Shelter in Place or State to Regional Media Coverage		Reportable Quantity with Agency Presence or Prolonged Remediation		\$1MM to \$10MM		PCD network exposed to Internet or technology is new to PCD	
i Fi			IV	Multiple Fatalities across the Site or Public Fatality		Public Evacuation or National Media Coverage		Agency Intervention or Permanent Environmental Damage		Greater than \$10MM		PCD network is compromised or effects unknown	

Figure 1: Example risk assessment matrix

- Asset inventory
- · Patch management and baseline configurations
- Personal devices
- Software, firmware, and hardware configurations,
- Response plans

To highlight a few areas of key importance, organizations must set the cybersecurity standards they will follow. For example, government agencies closely follow the standards of the National Institute of Standards and Technology (NIST); for OT, that standard would be NIST SP-800-82. Not all the recommendations may be required, as each organization's infrastructure is different, hence why risk assessments are extremely important. In addition to NIST, other standards include International Organization for Standardization (ISO/IEC), North American Electric Reliability Corporation (NERC-CIP), American National Standards institute or International Society for Automations (ANSI/ISA), and/or Center for Internet Security (CIS). These standards, along with the associated risk characteristics of an organization's infrastructure, will create the initial draft of policies and procedures. These initial, steps coupled with employee training, are key in creating a strong base for cybersecurity initiatives.

The threats of cybersecurity to OT/ICS environments have expanded drastically across all sectors of industry. Malicious actors have leveraged insider threats, ransomware, networking pivoting, policy violations, and compromising third party relations to gain a foot hold into OT and critical infrastructure networks. Examples include Stuxnet, TRISIS, Shamoon (1-3), and WannaCry. Specifically, in the oil and gas industry, several entities are gaining sophistication in their targeted attacks, including Xenotime, Magnallium, Dymalloy, Chrysene, Hexane, and nation-state or quasi-government actors.

The first step towards securing infrastructure is a culture change that all organizations and their employees need to adopt; that is, making cybersecurity a new priority. Cybersecurity threats are growing, and organizations must respond to protect its people, imagine, community, and the security of our nation.



Terry Horn, Director of Operation Technology, Associated Universities Inc. | Woodstar Labs Cybersecurity

Terry Horn joined AUI as a leader in cybersecurity operational technology. He focuses on business development, strategic technologies

in industrial control systems (ICS), cybersecurity initiatives, and conducting hands-on assessments for clients and partners within the ICS and operational technology cybersecurity domain.

Related Publications/Contributions:

Author: There is More to Simulation Data, White Paper, Booz Allen, FEB-2016. | Fishing Through SCADA, White Paper, Booz Allen, MAR-2016. | Obtaining SCADA Simulation Data, White Paper, Booz Allen, MAR-2016. | Going Wireless within SCADA, White Paper, Booz Allen, APR-2016. | Manufacturing Control Systems, White Paper, Booz Allen, SEP-2016

Contributor: Cybersecurity Risk Steering Committee; Northeast Big Data Innovation Hub, NYU, Columbia University Control System Cybersecurity Association International

Go Opposite in the Face of Uncertainty

s COVID-19 uncertainty spreads around the world at an exponential pace, the global community is finding out that reacting quickly to the societal and economic disruptions that the virus creates, no matter how agile a reactor you are, is not good enough and quite frankly, is simply not working.

With disruptive changes moving so fast, everything seems to be uncertain, and that uncertainty can cause us all to "wait and see," which is the exact opposite of what we should be doing now! The only way individuals, entrepreneurs, business and government leaders can get ahead of the spread of the virus, and get control of its speed and devastating impact, is to stop focusing on reacting quickly, or "pivoting," as some have called it, and start becoming anticipatory by separating the Hard Trends that will happen from the Soft Trends that might happen and can be changed.

You cannot change a Hard Trend, but you can see it coming, and by knowing what will happen before it happens, you can create strategies to take advantage of that trend, giving you certainty and the confidence to make bold moves as you move ahead. Another major advantage of Hard Trends is that they allow you to identify the problems that are ahead and solve them before they occur. **66**—

You cannot change a Hard Trend, but you can see it coming, and by knowing what will happen before it happens, you can create strategies to take advantage of that trend, giving you certainty and the confidence to make bold moves as you move ahead.



However, it is important to note that the exponential spread of COVID-19 as it doubles every three days is a Soft Trend, meaning that the exponential spread can be changed!

Pandemic Uncertainty Problem

The coronavirus pandemic has leveled the playing field. The exponential uncertainty it brings with it has forced increasing numbers of people to live day-by-day as they try to protect what they have in an effort to combat what might happen as this highly unusual year unfolds.

However, it is important to note that the exponential spread of COVID-19 as it doubles every three days is a Soft Trend, meaning that the exponential spread can be changed! Anticipatory government and business leaders saw the predictable exponential spread of the virus and the potential human and economic impact. They realized it was a Soft Trend that could be changed and took action to slow and eventually stop the spread by closing nonessential businesses and implementing strong social distancing measures in order to flatten the curve, save countless lives, and save millions, billions, and even trillions of dollars.

As we lock down, work remotely and do our best to remain healthy and safe, realize that everyone is hurting and with that, there are enormous new ways to make a bigger difference as you simultaneously grow your business.

So how do you innovate when everyone's mindset is to wait out the storm? You Go Opposite; take the road less traveled to take your organization from success to significance and turn this pandemic disruption into opportunity.

Going Opposite

I've written about this anticipatory principle in the past; I call it the Law of Opposites. By looking for a solution to a problem or a new opportunity in the exact opposite direction from where you are currently looking, you will see amazing solutions and opportunities that were outside of your view. From a strategic standpoint, when everyone goes one way, Anticipatory Leaders often go the other and take the road less traveled.

There isn't a better time to do this! The pandemic and lock downs already are a road less traveled, one in which many will sit on the sidelines and wait and see what will happen. In many ways the world seems to be hitting a pause button as the vast majority goes into a hold position. By doing so, they will not be ready for the identifiable certainty that the pandemic will end.

Many might think that having a wait and see approach is less stressful, but the opposite is true. As you wait, you will see others moving ahead, intuitively knowing that while others are moving ahead, you're falling behind. The stress of waiting for months will mount, making it harder to start moving again.

I'm sure you have heard the old saying: "an object at rest tends to stay at rest, while an object in motion tends to stay in motion." Admittedly, it's hard to move forward when you can't see ahead. That's why you should start with the opposite; observe what you can see instead of focusing on what you can't

see. Instead of looking at all the things you aren't certain about, ask yourself: What are you certain about? Instead of looking at all the things you can't do, ask yourself: What can you do now? Why not do the opposite while everyone else sits and waits?

Redefine and Reinvent Everything!

This is the perfect time to redefine and reinvent what you do and how you do it. Redefining and reinventing are core principles of Anticipatory Leaders, and as we see, current systems, such as how we deliver healthcare and the global supply chain, buckle under the load. The fault lines in our systems become highly visible and the systems become ripe for reinvention.

The fact is that every system is ripe for reinvention, and the best time to do it is now. When times are good, transformational change can be put off, but when the world and everyone in it is hurting, people are much more open to new, innovative ideas. It's time to double down on redefining and reinventing your products, services and customer experiences before someone else does, and if you do this while helping others through the crisis, you will find a lot more help along the way!

Focus on Becoming a Positive Disruptor

The news, which has been quite dark lately, is focused on the virus, what it has done and is doing. It's imperative to look beyond the news and to look ahead at what we do know!

I would like you to consider becoming a positive disruptor, creating the transformations that need to happen to make the future better for everyone. This is not as hard as it seems, because perfection is impossible; everything can be improved. Everything has facets to it that can be changed for the better. A positive disruptor has the power to unite people and help humankind move forward in a positive and productive way.

66—

Remember, trends by themselves do not have power until you attach them to an opportunity, which is when they burst into actionable light.



A New Beginning

In this new year, new decade and global pandemic, where do you start? It's simple; find certainty by identifying the Hard Trends that will happen and the related opportunities to move forward. Remember, trends by themselves do not have power until you attach them to an opportunity, which is when they burst into actionable light. And positive disruptors use Soft Trends to their advantage, because they can change them if they're undesirable.

When everyone is stuck in one mindset, go opposite! If you anticipate instead of reacting, redefine and reinvent instead of waiting, move forward instead of standing still, and focus on significance over success, you will put yourself and your organization much further ahead than ever before.

In this time of unprecedented uncertainty, actively shaping your future by becoming an Anticipatory Leader has never been more important.

CHANGES AHEAD

Hard Trends - Easier to Identify Than You Think

A well-worn cliché says there are only two things you can be certain about: death and taxes. With apologies to those who agree with that statement, there are many, many more examples of out-and-out certainties. Was Sunday followed by Monday last week? Absolutely. Will that be the case next week? You can count on it.

A more timely and, in some ways, comforting example involves the ever-changing situation we find ourselves in today with COVID-19. This pandemic has seemingly pressed pause on time, stifling businesses in many ways and rattling humankind as we're told that each day is fluid, and we're not sure what the next day will bring. Monday will still follow Sunday, but will it be business as usual? Right now, the answer is no.

But, if Hard Trends, or future certainties, are as easy to identify as I maintain, what is the Hard Trend in all of this? It's as obvious as my days-of-the-week anecdote above: This virus will end, and that is a fact that will happen. Because of this, you better believe that, aside from the length of the coronavirus's impact, there are still Hard Trends in every industry, plus plenty of opportunity in the disruption that is this global pandemic.

In order to be able to identify Hard Trends during these unprecedented times, we must diagnose the very concept of Hard Trends and how they can lead to significant game-changing opportunities for you and your organization.

What's a Hard Trend?

As previously stated, a Hard Trend is a future certainty, in that it is something we know is going to occur whether we want it to or not. Opposite of Hard Trends are Soft Trends, which are future possibilities that may or may not take place. In the case of Soft Trends, these can be changed to your, and your organization's, benefit.

Leveraging Hard Trends to your advantage is how you can also pre-solve problems before they exist.

To further explore my Hard Trend Methodology and how it can help you be more anticipatory during times like we currently face, I have grouped Hard Trends into three primary categories for identification purposes.

Demographics. This can be age, race, gender, or any other defining characteristic of a group. During this pandemic, an example is an older generation like the Baby Boomers. The fact that they are more susceptible to COVID-19 is a definite Hard Trend.

Government Regulations and Oversight. For this category, a broad question immediately comes to mind: As a general rule, will there be more or less government regulation in the future? If we've learned anything from the coronavirus pandemic, it is that there will definitely be more. As new innovations emerge amid the lockdown, new governmental regulations will evolve in response to them. This is true, regardless of the industry or organization, making this a Hard Trend.

Technology. From the ever-increasing accessibility of 3D printing to holographic telepresence, technology is inevitably going to become more functional, more sophisticated and more widespread. In addition to how we have learned to use already-existing technology during the pandemic, this makes technology in any capacity a Hard Trend; we will always be finding a newer, better way to accomplish a task or create something.

Why Hard Trends Matter

Knowing that something is a future certainty means so much more in times like these. It's central to your organization's planning and subsequent execution of innovation, even during an economic shutdown.

In terms of government regulation, coupled with the ever-changing spectrum of this pandemic and subsequent lockdown, being aware of the Hard Trend of growing government regulation allows you to become more anticipatory with those additional guidelines foremost in your mind, allowing you as an organization to continue to progress and grow.

Leveraging Hard Trends to your advantage is how you can also pre-solve problems before they exist. Case in point: When the United States government mandated a stay-at-home order, closing the physical operations of many non-essential businesses, many threw up their hands in frustration, while others decided to adapt and overcome, taking advantage of opportunities to continue to operate during a shutdown — and profited accordingly.

What you can expect is that Hard Trends — identified and acted upon — can offer enormous opportunities for those organizations with the mindset of always keeping their eyes open to the future.

Use Soft Trends to Influence the Future

There are certain things about the future that we simply can't change. Some are rather obvious. For instance, spring will always follow winter. New Year's Day will always be January 1, at least in many parts of the world. Those are chronological certainties.

There are other future certainties that have nothing to do with the calendar. For example, are the phones we use in the future going to be capable of doing more or less? Of course, they'll be able to do more. That's a certainty.

But what about those things that aren't quite so cast in stone? For instance, will it be colder tomorrow than today? No one can say for certain. Will the stock market rise or fall? Your guess is as good as mine.

The Definition of Soft Trends

Although events that lack certainty may be unnerving to some, I absolutely love them. I call them Soft Trends, and they are a central principle of the overall Anticipatory Organization Model.

Soft Trends are future maybes: those events, developments and other things that may or may not take place.

As I mentioned earlier, one of the greatest appeals of Soft Trends is that they can be changed. They can be altered and, depending on what you know about them and how you use them, they are open to influence, leverage and ultimately, enormous opportunity.

Further, there are positive Soft Trends as well as negative Soft Trends — in so many words, those trends that you want to maintain and build on and those that you may wish to reverse.

For instance, one Soft Trend is the growing number of students furthering their education through online learning. That's certainly a good thing and a Soft Trend that you may like to nurture and possibly leverage.

By the same token, the number of obese people continues to increase — a Soft Trend, and a negative one at that. In looking to influence this Soft Trend, you'd likely investigate ways to try to reverse this disturbing health pattern.

For instance, one Soft Trend is the growing number of students furthering their education through online learning.



Hard and Soft Assumptions

Another component to Soft Trends is the assumption that underlies them. On one hand, there are Hard Assumptions — defined, empirical data and information. Soft Trends supported by Hard Assumptions are more likely to happen.



For instance, rising health care costs in the United States is a Soft Trend, but one supported by Hard Assumptions — decades of data detailing steady increases in costs. That makes it more likely to continue in the future.

On the other hand, Soft Trends underscored by Soft Assumptions are less likely to occur. Moreover, treating them as though they offer greater certainty than they do can be a dangerous misstep.

For example, when the Affordable Care Act (ACA) was implemented, there was a Soft Assumption that there would be enough young people signing up to offset the higher costs of older participants. One problem: There was no comprehensive research in place to support that — one of many Soft Assumptions that had an adverse effect on the ACA's launch.

The Need to Carefully Identify Soft Trends

Paying attention to Soft Trends can unlock enormous opportunity for you and your organization.

But the caveat is first recognizing the difference between Soft Trends and Hard Trends, which are future certainties. The simplest explanation is, if you have to think about it, it's a Soft Trend. Hard Trends are generally obvious at first glance.

Moreover, it's critical to separate Soft Trends that are driven by Soft Assumptions from those underscored by Hard Assumptions. Even though Soft Trends are never a future fact, they carry a far greater level of confidence when they are associated with Hard Assumptions. A Soft Trend with a Soft Assumption, on the other hand, could be much less of a sure thing.

You can see that Soft Trends offer enormous opportunity if you know how to identify them and with what level of confidence you can use them to your advantage. So, with that in mind, what Soft Trends can you pinpoint that will impact you, your organization or your entire industry?

Daniel Burrus is considered one of the world's leading futurist speakers on global trends and disruptive innovation. The New York Times has referred to him as one of the top three business gurus in the highest demand as a speaker.

He is a strategic advisor to executives from Fortune 500 companies helping them to develop game-changing strategies based on his proven methodologies for capitalizing on technology innovations and their future impact. He is the author of seven books, including The New York Times and Wall Street Journal bestseller Flash Foresight, as well as the international bestseller Technotrends. His latest book, The Anticipatory Organization: Turn Disruption and Change Into Opportunity and Advantage , is an Amazon #1 Hot New Release for Business.

Strategic Communications



his effort was kicked off with the development of a new strategic plan, which was approved by UPA member companies on the Communications Committee and the Executive Committee.

Simple steps such as standardizing our messaging to focus on our core issues and value proposition and being more strategic in how, what, and to whom we communicate will go a long way in keeping the industry's value to Utah at the forefront of energy policy and regulatory discussions.

One of UPA's communications goals this year has been to identify, educate, and train employees and industry supporters who can speak on behalf of the industry and its role in their lives at public hearings and events.

Welcome New Members



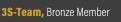
Robert L. Bayless Producers, Bronze Member



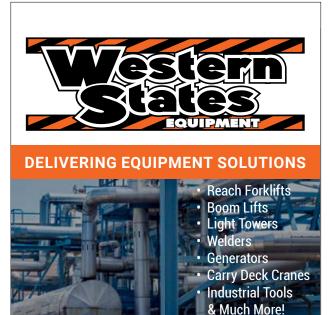
MMR Group, Bronze Member



AERUS



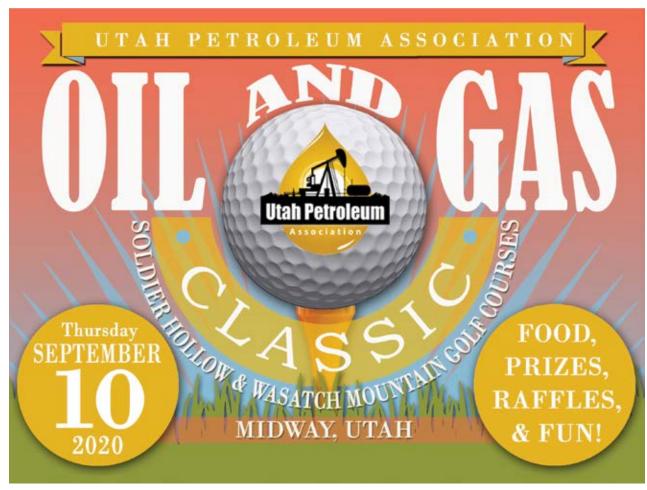
Caerus Oil & Gas LLC



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Save the Date

The second annual basin shootout will be in September details coming soon.



e hope you will join us for the UPA Oil and Gas Classic! This is our most attended event of the year, so don't miss out! We understand the challenges we have all faced over the last few months with the drop in crude prices and the pandemic, but we are hoping that this will be a springboard of future

success for you and the industry.

We have streamlined registration so that you can quickly and easily register and pay online. If you have difficulties, please contact Jennette (801-703-4444, jking@utahpetroleum.org) and she will be happy to walk you through the process.

UPDATED EVENT INFO: Due to COVID-19, we will follow the health guidelines at the time of the event. We strongly encourage social distancing and require a mask be worn when in the clubhouse or if a 6' distance is not possible. Masks are available upon request and hand sanitizer will be available in each cart. We will have tee times or a modified shotgun and will not gather for our group lunch and awards. Raffle winners will be announced via email and website at the end of the day. Contactless credit card payments will available for purchasing raffle/mulligan tickets. Boxed lunches will be provided at the clubhouses, and you are welcome to grab-and-go or stay for a socially distanced outdoor lunch following golf. Your safety is our highest priority, so please bear with us because details may change as the event approaches.

Cancellation Guarantee: If for any reason we need to cancel the event, we will refund any payments in full.



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EIA's view of the Impacts of COVID-19 on the Energy Industry

he Deputy Administrator, U.S. Energy Information Administration, U.S. Department of Energy, Stephen Nalley, delivered a statement to the Energy and Natural Resources Committee of the U.S. Senate on June 16, 2020. While the assessment of the energy sector continues to evolve and more recent updates can be found in the EIA monthly and weekly update reports, we wanted to share Mr. Nalley's high level summary of the impacts of COVID-19 on the energy sector.

Chairman Murkowski, Ranking Member Manchin, and Members of the Committee, I appreciate the opportunity to testify about the U.S. Energy Information Administration's (EIA) assessment of the effects the 2019 novel coronavirus disease, or COVID-19, has had on energy markets. My testimony reflects EIA's latest assessment and forecast as published in our June Short-Term Energy Outlook.

Even during less challenging times, market outlooks like our Short-Term Energy Outlook are subject to many uncertainties. Because we update the Outlook monthly, recent editions have reported significant changes in energy markets as we learn more about the evolving effects of mitigation efforts related to COVID-19. Reduced domestic and worldwide economic activity have resulted in unprecedented changes in energy supply and demand patterns. We will continue to study these effects and report what we learn in our monthly updates.

This month's Outlook reflects a forecast decline in U.S. gross domestic product of 7.4% in 2020, largely related to continued mitigation efforts related to COVID-19. Because EIA focuses solely on energy issues, we are not in a position to generate a broader macroeconomic forecast, and we have long used IHS Markit forecasts as the basis of our U.S. gross domestic product forecast and Oxford Economics forecasts for global gross domestic product.

As a result of the effects of travel restrictions and stay-at-home orders on the U.S. economy, EIA forecasts that domestic consumption of petroleum liquids, will decrease, with gasoline consumption falling by nearly 13% in 2020 and diesel decreasing about 10%. We believe that the most significant declines in domestic consumption of petroleum liquids have already occurred and consumption will grow over the next 18 months. Nevertheless, we do not expect to see a return to 2019 consumption levels by the end of 2021. Similarly, global consumption of petroleum and liquid fuels will decrease by more than 8 million barrels per day in 2020, with most of the decrease having already occurred during the second quarter of this year.

U.S. crude oil production, which reached an all-time high of 12.9 million barrels per day in November 2019, had fallen by 1.5 million barrels per day as of May 2020. We expect to see a continued decline in U.S. crude oil production until March of next year. Globally, we forecast that supply will fall by almost 6 million barrels per day in 2020. The decrease in non-U.S. supply is mainly the result of voluntary cuts by the Organization of the Petroleum Exporting Countries, or OPEC, and its partner countries.

Given these changes in demand and supply, we expect that global liquid fuels inventories will grow by an average of 2.2 million barrels per day in 2020. We estimate that inventory builds peaked during April, which was the result of a sharp decline in global oil demand because of widespread travel limitations and reduced economic activity.

The Brent crude oil price averaged \$29 per barrel in May, \$11 per barrel higher than in April as a result of a number of OPEC producers that deepened their production cuts beyond the initial April 12 agreement to voluntarily decrease production. We expect that monthly Brent crude oil prices will average \$37 per barrel during the second half of 2020 and rise to an average of \$48 per barrel in 2021. Although large inventories and spare crude oil production capacity will temper prices during the coming months, we expect upward price pressures will increase as inventories decline into 2021.

Beyond crude oil and liquid fuels, reduced economic activity related to COVID-19 mitigation efforts has had far-reaching effects on natural gas and electricity markets in the United States and globally.

We expect to see both natural gas consumption and production in the United States decline in 2020, with consumption declining by about 4% and production falling by nearly 3%. Despite our forecast of a recovery in 2021, we do not expect U.S. production and consumption to return to 2019 levels. Reduced manufacturing activity in the United States, along with lower exports of liquefied natural gas, have lowered our forecast of U.S. consumption in 2020. Weaker natural gas demand will keep prices relatively low in 2020, but we expect that rising demand into next winter, in the face of lowered production, will exert upward pressure on natural gas prices at the end of 2020 and into next year. We forecast that the U.S. benchmark Henry Hub natural gas spot price will rise to an average of \$3.08 per million British thermal units in 2021, compared with \$1.75 per million British thermal units in May of this year. The biggest declines occur in the commercial sector, although we expect all sectors to purchase less electricity this year. For residential customers, milder expected temperatures compared with 2019 reduce our outlook for space heating and cooling.

In our June Outlook, we reported 5.7% less electricity consumption in the United States in 2020 than in 2019. The biggest declines occur in the commercial sector, although we expect all sectors to purchase less electricity this year. For residential customers, milder expected temperatures compared with 2019 reduce our outlook for space heating and cooling. These milder temperatures more than offset increased use of residential electricity as more people work and spend more time at home while social distancing guidelines remain in place. We forecast retail electricity prices for all the residential sector to increase slightly, while the commercial and industrial sector retail electricity prices will fall by about 1% in 2020.

Our Outlook also reports that U.S. coal production will fall by 25% in 2020, the result of both decreasing demand for U.S. coal exports and declining coal-fired electric power generation in the United States. Metallurgical coal mines in Appalachia have slowed production as a result of reduced demand for coking coal for global steel production, while production in the West declines, in part, because of slowing demand for steam coal from key importers such as India.

In addition to our Short-Term Energy Outlook, we have published new analysis and data products to improve the public's understanding of energy markets during the COVID-19 pandemic. For example, changes in petroleum product demand and relatively slower changes in crude oil production led to rapid increases in U.S. petroleum inventories in March and April. This sudden increase quickly diminished available crude oil storage capacity in the United States and caused concern among market participants, which added to uncertainty in the market. In response to these concerns, including those shared by Chairman Murkowski in her letter to the EIA Administrator on March 31, in early April, EIA began to track and update U.S. crude oil storage utilization in a Weekly U.S. and Regional Crude Oil Stocks and Working Storage Capacity report.

We have also published a number of articles in our Today in Energy series that explain how information in various EIA products can help the public understand what is happening in energy markets. These articles include in-depth explanations of key petroleum data products, such as the Weekly Petroleum Status Report and the Gasoline and Diesel Fuel Update. We also published articles on natural gas and electricity, including articles on the Weekly Natural Gas Storage Report and the Hourly Electric Grid Monitor.

We will continue to monitor events in energy markets globally and continue to update our monthly short-term forecast to reflect our developing understanding of the effects of the mitigation efforts related to COVID-19 on the energy economy.

Chairman Murkowski, Ranking Member Manchin, and Members of the Committee, thank you for the opportunity to present this information, and this concludes my testimony.

The Deputy Administrator, U.S. Energy Information Administration, U.S. Department of Energy, Stephen Nalley, delivered a statement to the Energy and Natural Resources Committee of the U.S. Senate on June 16, 2020. While the assessment of the energy sector continues to evolve and more recent updates can be found in the EIA monthly and weekly update reports, we wanted to share Mr. Nalley's high level summary of the impacts of COVID-19 on the energy sector.

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Member Update:

the human the Thank you from the Chevron Refinery! For added convenience, download the Chevron roa aouar comentence, oosmood me creater nobile ago, add the girl card and bay by phone Chevron has a long history of supporting communities and reter efforts. We are communitied to being a cross response to the communities where our employees live and relief efforts. We are committed to being a strong and work.





Community Giving

In addition, Chevron also donated 330 gallons of hand sanitizer to the local Davis School District to protect teachers and students alike.

o celebrate the industry's ongoing role in the community, we like to highlight one member company's efforts in each of our newsletter issues. Each of our companies are making considerable contributions to their neighbors and local organizations, and we couldn't be more proud of this ongoing commitment.

Throughout the COVID-19 pandemic, Chevron has stepped up its ongoing support of community organizations and first responders by providing \$50,000 in gas cards to three organizations in the Salt Lake area. The Utah Food Bank, Bountiful Community Food Pantry and South Davis Metro Fire Department put the cards to use to meet workforce and community fuel needs.

In addition, Chevron also donated 330 gallons of hand sanitizer to the local Davis School District to protect teachers and students alike.

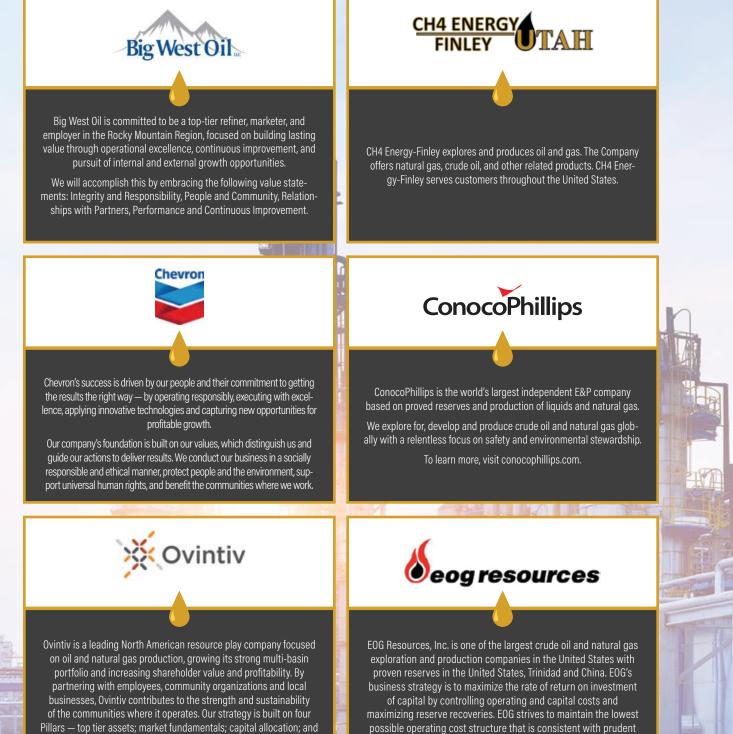
"First responders and food banks are some of our heroes during this crisis. The medical care and food supplies they provide are more essential than ever," said Mitra Kashanchi, the refinery manager for Chevron Salt Lake. "We hope this demonstrates how grateful we are for their tireless efforts during this challenging time."

"Utah Food Bank is so grateful to Chevron for their corporate partnership during this critical and uncertain time," said Ginette Bott, Utah Food Bank president and CEO. "We have many staff members on the front line of hunger who are still going to work every day to help the Food Bank support the hundreds of thousands of Utahns affected by this crisis. This contribution will help ease their fuel needs and let them know that they're valued for the work they continue to do."

"Bountiful Community Food Pantry is most appreciative of Chevron's donation," said Lorna Koci, director of the pantry. "I know many people will be greatly relieved with the assistance that Chevron is making possible."

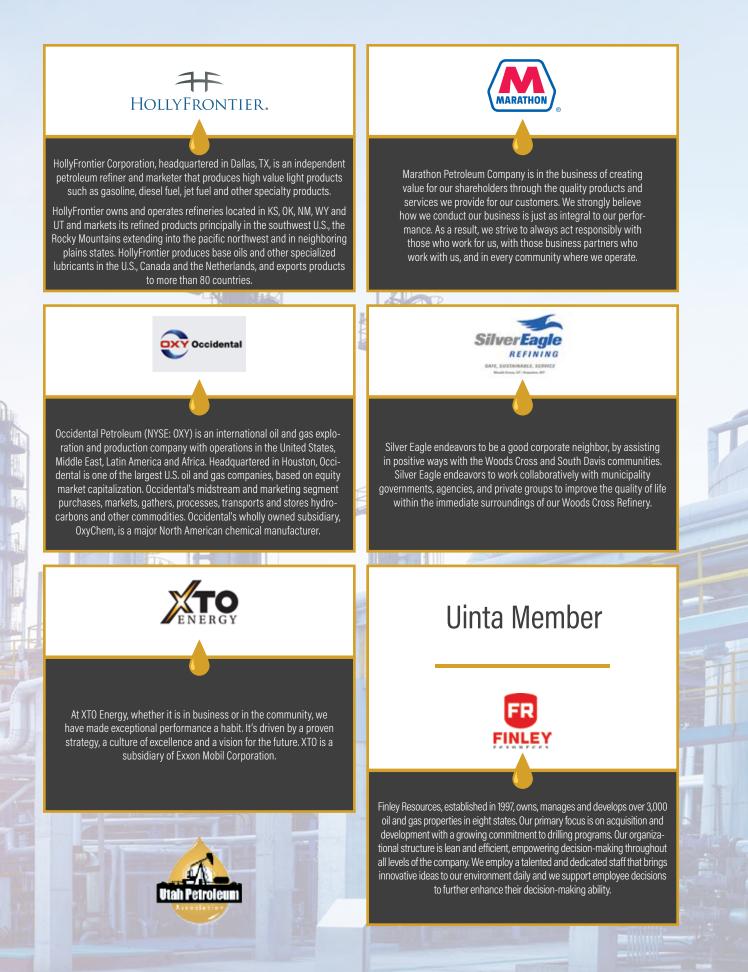
"South Davis Metro Fire is grateful for the ongoing support to our organization by the Chevron Refinery. These are stressful times for our firefighters who along with so many others are working the front lines of the COVID-19 response. We are committed to the needs of our community and continue to provide excellent services under these challenging times. It is great that the Chevron Refinery is recognizing our first responders for the work they do," said South Davis Metro Fire Chief Jeff Bassett.

Thank You Chairman's Circle Members



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