MONTHLY NEWSLETTER OF THE VIRTUAL LOCAL SECTION OF AICHE
JUN 2021 - VOLUME 11, ISSUE 6

This month's meeting:
Primary (with live discussion/live chat) Wednesday, Jun 23 at 9 pm ET (US) / 1 am GMT
Alternate 1 (with live discussion/live chat) Thursday, Jun 24 at 7 am ET (US) / 11 am GMT
Alternate 2 (with live discussion/live chat) Thursday, Jun 24 at 1 pm ET (US) / 5 pm GMT

Chemical Fuels in a Carbon Neutral Energy System

Presented by Dr. Samuel M. Goodman,
Senior Principal and lead chemist at Biomimicry 3.8

Mitigating climate change necessitates stopping net carbon dioxide emissions within the coming decades. Part of this transition requires moving from fossil fuels like coal and natural gas to renewable power sources to meet our electricity needs. However, with the exception of geothermal, renewables are largely non-dispatchable. Intermittencies in wind, solar, and hydropower lead to duck curves, necessitating a fossil fuel baseload to meet demand. Completely decarbonizing electricity generation thus requires energy storage across hours, days, and seasons. This presentation examines how fuels can help bridge that divide, evaluating the different options available to us and constructing a renewable, carbon neutral, and scalable system of fuel generation and consumption.

Dr. Samuel M. Goodman is a chemical engineer by training, earning his doctorate from the University of Colorado at Boulder after his undergraduate studies at the University of Wisconsin Madison. Following graduate school, Dr. Goodman completed a postdoctoral fellowship at the National Academy of Sciences and was an AAAS Science and Technology Policy Fellow at the U.S. Department of Defense. He is currently an analyst at the U.S. International Trade Commission. Dr. Goodman currently lives in Northern Virginia with his wife, Ashley, where they enjoy cooking and spending time outside together.

Note that registration for VLS meetings is required.
Our meetings are still free to attend and open to all.

June Meeting Registration Information

Primary	**Alternate 1**	**Alternate 2**
(Live Presentation/Live Chat)	(Recorded Presentation/Live Chat)	(Recorded Presentation/Live Chat)
June 23 at 9 PM EST / 1 AM GMT	June 24 at 7 AM EST / 10 AM GMT	June 24 at 1 PM EST / 5 PM GMT
Register in advance for the Primary Meeting	Register in advance for the Alternate 1 Meeting	Register in advance for the Alternate 2 Meeting

After registering, you will receive a confirmation email containing instructions for joining the meeting, along with add-to-calendar links.

Are You Willing to Accept A Pay Cut For The "Live Anywhere Work From Home" Work Trend?

by Dr. Lucia Feng, President & CEO
OnCareerSuccess Inc.

COVID-19 infection rates across much of the U.S. are rapidly declining as vaccinations of the U.S. population continue. As of June 1, 2021, over 135 million people, or 41% of the total U.S. population is fully vaccinated [1]. Thus the COVID-19 freeze begins to thaw with more and more states lifting restrictions and "reopening" their economies to a new normal. The state of California for example is on track to fully reopen its economy on June 15th.

Economically the U.S. government multi-trillion dollar stimulus efforts started 2021 on a strong footing at a government reported measure of growth, called the gross domestic product (GDP), at a 6.4% annualized rate. Workwise many corporations - especially those involving manufacturing within or using specialized physical facility infrastructure such as cleanrooms or chemical processing plant – have been quietly increasing the number of workers onsite, bringing back more shifts or increasing number of working days onsite.

Concurrently many companies are making public their policies on eligibility for hybrid or completely remote work amidst announcements of their reopening plans to move away from remote work/operations and bring workers back to offices. Hybrid here refers to a combination of a yet-to-be determined number of days of working from home and a few days working in the company office onsite.

Here is a sampling of public announcements from some technology companies. Salesforce in April extended the remote work option until December 31 from the original date of end of July, but would bring some workers back to its headquarter office if local COVID-safety conditions allow. Twitter allows many workers to choose to work remotely forever. Microsoft said its employees in the Seattle metro area can choose between returning to work full time, continue to work remotely, or implement a hybrid arrangement. In contrast, Google announced workers could continue to work from home until September and return to work onsite for at least a few days a week. Additionally, workers can apply to be fully remote or change offices but could see a pay cut according to the new location [2].

So how much of a pay cut is acceptable to you? What are the true costs of work from anywhere? And who are likely affected?

Answers to the above questions and the implication for pay could reshape the US workforce and work trend.

Some Facts About Individuals Working Remotely

Analyses of Bureau of Labor Statistics by the Brookings Institution found that those who can telecommute (i.e. work remotely) tend to be higher paid professionals. These knowledge workers working from home in 2017 and 2018 make up just less than half of the workers in the top 25% of the earning distributions. In contrast, only 4% in the bottom quartile did any paid work from home [3].

Pew Research recently reported how COVID-19 has changed the way how Americans work [4]. Before the pandemic, most workers who say they can do their jobs from home reported they rarely or never teleworked; only 20% say they worked from home all or most of the time. The pandemic arrival now has 71% of these workers doing their job from home all or most of the time. If given the opportunity over half say they would want to keep working from home even when the pandemic is over.

Pew Research further found that about 68% employed adults with a postgraduate degree and 58% of workers with a bachelor's degree reported their job responsibilities can mostly be done from home. In contrast, over 83% of workers with a high school education or less and 70% with some college level education say their job in most parts cannot be done from home.

Pew further reported that workers' ability to do their job remotely varies by industry. For example, 59% surveyed in professional, scientific and technical services or 59% in education say they can do their jobs mostly from home. In contrast, 78% in manufacturing, mining, construction and agriculture or two-thirds in health care sector say for the most part they cannot be done from home.

When COVID-19 began spreading in the U.S. with lockdowns still in place last fall, Pew Research [5] found that the share of U.S. adults who moved due to COVID-19 spread ticking up increased from 3% in June 2020 to 5% by November 2020. Among these individuals who moved, only 14% cited risk of COVID-19 in November 2020 compared to 28% in June 2020 as the reason for moving. In contrast, 18% in June 2020 increasing to 33% by November 2020 cited finances as the most important reason for moving.

Many newspapers and publications reported knowledge workers moving out of expensive coastal cities or metropolitan cities in the heartland into suburbs or less densely populated cities or region such as Montana. Does such relocation reduce costs for a worker? What are all the potential cost factors for remote workers?

Costs and Cost of Living

Bloomberg BusinessWeek [6] presented a chart based on information compiled by the Economic Research Institute on wages and the cost of living across the U.S. that shows how much a salary would vary across different metropolitan areas throughout the US and compares it to cost of living. The x-axis of this Bloomberg BusinessWeek chart is 'Cost-of-living Index'; the y-axis is 'Pay Index'. Due to copyright laws, this chart cannot be copied and shown directly in this newsletter; if interested you should look up the article referenced to see the data. Instead, a description and a few cities will be used as examples below for comparison discussions.

Name of City	(Cost-of-living index, Pay index)
San Francisco, CA	(170, 125)
Houston, TX	(93, 109)
San Diego, CA	(144, 110)
Baton Rouge, LA	(95, 95) *pay and cost of living index are equal
Provo, UT	(100, 93)

If you are a professional making $100,000, this chart suggests that living at Baton Rouge means your pay and cost of living index are equal. But if you move to Houston, you may get more bang for your money as Houston metro area at a cost-of-living index of 93 has below average cost of living and you may possibly get a pay adjustment upward. San Diego in contrast at 110 Pay index offers slightly better or at the same pay, but the cost of living is at least 40% more expensive when compared to Houston. A worker living in San Francisco at 125 pay index could see a potential pay cut of more than 20% if moving to Provo, Utah but experience a more favorable cost of living.

While the few examples aforementioned attempt to illustrate what the change in pay and cost of living could be for a knowledge worker moving from one metro area to another in pursuit of “remote working”, there are other hidden costs of working from home.

Bloomberg [7] reported research by the National Bureau of Economic Research found that “employees who find themselves without an office tend to increase their own spending”. Specifically, for the period between 2013 and 2017, households having at least one adult working from home spent more money on housing than households with all adults working outside of the house. The study found renters who worked remotely spent between 6.5% and 7.4% more of their income a month, and homeowners working remotely paid mortgage and property taxes that were 8.4% - 9.85 greater than non-remote household. In other words, regardless of where you are on the income ladder, remote workers were found to pay more for housing (rent). While these extra housing costs may not be a hardship for higher wage earners, employees working remotely who earn less would likely need a bigger salary adjustment to transition to remote working as they are already spending a bigger share of their income on housing.

There are other non-housing expenses which can add up for someone considering remote work forever. Besides setting aside the physical space needed for working, individuals working remotely would need to buy the necessary office equipment – think color printer, scanner, ergonomic chair and desk, etc. - which can easily add up to $1000 - $3000 USD. Cost of consumables such as toners/ink for color printers, printer paper, and other office supplies can easily add up to many hundreds of dollars a year. Even the snacks and coffee/tea drinks that were generously available in the office are no longer free when working at home. Additionally, remote workers need to have reliable high speed broadband connection and telephone that can easily cost another $100 or more monthly. Electricity for home office and HVAC heating/cooling to regulate atmospheric comfort of working at home can add another $200 or more per month depending on season and the worker’s location. Negotiating payment of these costs through corporate expense reimbursement or salary increase or keep same salary to offset these expenses if moving to a lower cost of living area are factors that must be considered by workers interested to permanently work remotely. Otherwise these expenses amount to pay cuts.

Win-Win on Savings and Talent Retention

Remote working does offer some (in)valuable savings. For the workers, no commute saves as much as 1-3 hours a day depending on the metro area the remote worker lives in. The times saved are productive hours that can be spent on exercise, quality time spent with family or friends, or for professional and personal improvement. The elimination of commute can save upwards of several hundred dollars of gas money and reduces carbon emissions. In California where a gallon of gasoline now sells for $4.50 (versus $2.50 at Connecticut) and where a sizable number of workers drive 100 – 200 miles round trip daily from bedroom communities to employment centers, it is not unusual for an individual to spend $500-$800 on gasoline a month. The wear and tear on a car/truck that puts a lot of mileage on for commute also exacts accelerated maintenance costs.

For the employers, employees working remotely achieve lower environmental impact and contribute to environmentally-focused corporate social responsibility program and corporate branding. In addition, allowing remote working also saves office space, HVAC operating costs, free/subsidized meals and snacks, and other costs such as site security and operating cafeterias associated with having a campus site. Potential savings of salary can be big if a sizable number of employees choose to work remotely and moving to a lower cost of living location from a higher cost region, such as moving to Provo, Utah from San Francisco, California. Additional cost savings of adopting a remote work culture include lower employee turnover as Gallup Research [8] found “54% of workers say they’d change jobs for the choice to work remotely or not”, where “companies that give them that choice will be at the top of job candidates’ lists and give the most talented workers a reason to stay.”

Summary

Hybrid work and remote work are the future of work. Gallup research have shown remote work is effective, improves business outcomes and attracts/retains talent. Knowledge workers choosing remote work option needs to weigh the true costs of working from home because companies permitting remote work may not and have not shown interests to pay the remote workers for the extra expenses - some of which were enumerated in the discussion above – that are incurred by the employees to carry out their responsibilities working from home. Instead several companies are adopting policies to reduce pay for employees who choose to work remotely depending on their location. Companies also have to weigh the opportunity cost of losing talent and less favorable business outcomes if they don’t adopt remote and hybrid work policies that meet the needs of their employees.

References:

1. “How Is The COVID-19 Vaccination Campaign Going In Your State?”, NPR, June 1, 2021.
2. E. Baron, “Google Announces Campus-Focused, Post-COVID Return-to-Office Plan”, The Mercury News, May 7, 2021.
3. “At Home Labor”, p. B15, The Mercury News, September 6, 2020.
4. K. Parker, J. M. Horowitz and R. Minkin, “How the Coronavirus Outbreak Has – and Hasn’t - Changed the way Americans Work”, Pew Research Center, December 9, 2020.
5. D’Vera Cohn, “As the Pandemic Persisted, Financial Pressures Became a Bigger Factor in Why Americans Decided to Move”, Pew Research Fact Tank, February 4, 2021.

6. N. Buhayar, “Go Burbward, Young Knowledge Worker”, Bloomberg BusinessWeek, p. 32-37, December 21, 2020.
7. S. Holder, “The True Costs of Working From Home”, Bloomberg.com, February 26, 2021.
8. A. Hickman and J. Robison, “Is Working Remotely Effective? Gallup Research Says Yes”, Gallup, January 24, 2020.

AIChE News

The AIChE hosts technical conferences around the world. Check www.aiche.org/conferences for registration and presentation information for this year’s events.

Dates	Event
June 8	PD2M Emerging Modalities
June 8	Leadership Workshop for Rising Star Women Engineers
June 8 – 10	2021 Process Development Symposium
June 9 – 12	Procesa 2021: AIChE Latin America Student Regional Conference
June 9 – 10	2021 Dow Sponsored Virtual CCPS Faaculty workshop
June 9	RAPID Technology Showcase Featuring Koch Modular
June 15 – 18	2021 Synthetic Biology: Engineering, Evolution & Design (SEED)
June 17	Explosion Prevention & Protection Options for Dust Collection Systems
June 24	Accelerating Rate Calorimetry in Improving Process Safety of Reactive Chemicals
June 24	CCPS Latin America Regional TCS Meeting
June 28	June 2021 TSC Meeting
June 30	2021 Process Development Symposium Europe
June 30	Small Scale LNG – Is it a Deal Breaker?
July 1	July 2021 TSC Meeting
July 8 – 10	2021 Brazil Student Regional Conference
July 11 – 15	Metabolic Engineering 14
July 13 – 14	Trends in Invigoration of Manufacturing and Engineering (TIME)
July 19 – 21	2021 Virtual International Mammalian Synthetic Biology Workshop (mSBW)
July 21	Global Hydrogen Safety Codes and Standards
July 28 – 29	2021 BASF Sponsored Virtual CCPS Faculty Workshop

Upcoming VLS Meetings

The VLS has monthly meetings. The following meetings have firm dates and speakers.

Dates	Topic
July 2021	Enhancing your process simulation workflows with MATLAB
Aug 2021	Role of Nuclear in Energy Transition
Sep 2021	Student Intern Competition
Oct 2021	Don’t wake sleeping dragons

Past VLS Meetings

The VLS records its monthly meetings and archives them on the AIChE Academy website in case you missed a meeting or are looking for a particular topic. See below for current recordings.

Date	Event
Feb 2021	Overcoming the Challenge of Applying Chemical Engineering Principles to the Art of Winemaking
Jan 2021	DIERS Technology Fundamentals II: VLS January 2021 Webinar
Nov 2020	Protecting Lives and Livelihood: Hazardous Materials Classification and its Impact to the Supply Chain
Oct 2020	Chemical Safety Board (CSB) Accidental Release Reporting Rule
Sep 2020	Internships and Undergraduate Education
Aug 2020	Physical Property Models to Design Better Chemical Products
Jul 2020	Julia - A Fresh Approach to Technical Computing
Jun 2020	The Next Digital Leap to AI (An Interactive Webinar)
May 2020	Challenges and Benefits of Remote Operator Training using Cloud-Deployed High-Fidelity, First-Principles Based Standard Operator Training Simulators (SOTS)
Apr 2020	NASEM Chemical Engineering in the 21st Century Study: Give your input!
Mar 2020	Is Your Focus Your Magic!
Feb 2020	DIERS data/standards in HAZOPS of two phase flow
Jan 2020	A Brief History of Measurement
Nov 2019	Using Thermal Imaging to Guard Industrial Facilities
Oct 2019	Python for chemical engineers: Getting started
Aug 2019	Reactive Chemical Hazards
Jul 2019	Should I Py or Should I Fortran?
Jun 2019	Design Considerations for Organic Electronic Materials and Devices
May 2019	Why Can't You Compete Without Virtual/Augmented Reality in Your Plant
Apr 2019	The Chemistry of Bourbon: The "spirit" of molecules
Mar 2019	Demystifying Professional Engineering Licensure and How to Put it to Work for you
Feb 2019	Municipal Wastewater and Sludge Are a Resource, Not a Waste: Coping with Tightening Water Supplies and Limited Landfill Availability

We're in this Together

The ongoing COVID-19 situation has provided us with a reminder that even in uncertain times, AIChE is a diverse community of people who lead, create, inspire and learn—together. AIChE is here to help. Knowing that many of our members are working virtually, AIChE has created this page to act as a hub for online content, access to communities, and communication updates. Learn more.

The Virtual Local Section's Executive Committee

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Did You Know?

You can visit the VLS website for more information on the Virtual Local Section's mission, activities, and membership. Also at this website, AIChE student members and VLS members can watch previous webinars for free.

Subscription Information

Current fully paid members of the Virtual Local Section receive this newsletter. If you wish to update your email address, contact the AIChE's New York Office for Permanent Address Corrections at xpress@aiche.org or 1-800-242-4363.

Continuing Education Credits

Members of AIChE can receive 1 hour of continuing education/professional development credit for attending Virtual Local Section webinars. Send your name, the certificate number on your professional engineer's license, and the licensing entity (state or country) in which you are licensed to our Secretary, Laura Gimpelson, to receive one hour of continuing education credit for attending this meeting.