

**Center for Irrigation Technology
Water, Energy and Technology Center**

**California Agricultural Technology Institute
Jordan College of Agricultural Sciences and Technology**

Annual Report 2020 - 2021

Submitted

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by

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2020-2021 ANNUAL REPORT

Center for Irrigation Technology Water, Energy and Technology Center

PROGRESS MADE ON FY20/21 GOALS AND OBJECTIVES

CIT GOALS AND OBJECTIVES

1. Continue to strive for organizational excellence

CIT Goal #1 Progress

- Organizational excellence, in this context, refers to CIT's ability to effectively and efficiently provide services to researchers, faculty, students, and industry. COVID has forced many changes in how CIT executes on post-award administration. Most of these changes have focused on enabling virtual collaboration across research teams and the Center's staff.
- Over the past year, CIT has seen good adoption and use of the Basecamp project management platform. This tool has enabled virtual asynchronous collaboration on many office and field operations including several research projects.
- CIT has normalized the Crop Coordination Meeting where all researchers (or their proxy) attend bi-monthly meetings to plan field operations and coordinate the use of shared resources.
- Center DAA Munoz, along with one particularly talented student, have reorganized CIT's budget tracking. The new system is based entirely in Google Sheets and incorporates overviews, dashboards, and individual sheets for each account. This tracking system also has individual Google Drive folders for both projects and accounts. This system alleviates much of the consternation within CIT caused by the previous tracking system which relied almost entirely on email. The system is still limited in that a human must manually copy information from JD Edwards system.
- All of the faculty and staff are now comfortable (or at least proficient) with virtual collaboration. However, collaboration on a personal level is still challenging because of COVID precautions. We are finding it difficult to build personal relationships that enable trust-based collaboration.

2. Develop a software testing service for irrigation-related applications that support goals of the agriculture and landscape community in California particularly and the US generally.

CIT Goal #2 Progress

- COVID has severely thwarted this goal. The initial step here was to foment demand and support amongst industry. While some progress was made, COVID restrictions limited the networking opportunities needed to convince industry stakeholders that

this testing service is valuable to industry. We expect more progress on this goal as COVID restrictions relax.

3. Maintain engagement in standards development bodies.

CIT Goal #3 Progress

- CIT continues to maintain engagement with several standards bodies including the International Organization for Standardization (ISO) and the American Society of Agricultural and Biological Engineers (ASABE). CIT staff are serving as Head of the US Delegation to ISO TC23/SC18 (Irrigation Equipment) and as chair of the US Technical Advisory Group to the same ISO committee. Finding qualified professional volunteers to review standards has been an ongoing challenge. CIT staff will continue to work closely with ISO, ASABE and industry to build the pool of qualified reviewers.
- CIT staff also serves as the chair of the AgGateway Standards & Guidelines committee, chair of the Irrigation Association Drip special interest group, and participate in ASABE technical committees which develop standards for agriculture and landscape irrigation.

4. Continue to reinvigorate industry relationships.

CIT Goal #4 Progress

- While this activity was hampered by COVID, the activity did continue. CIT faculty participated in several Agricultural Research Institute (ARI) and Irrigation Innovation Consortium (IIC) grant proposals which required direct industry support and participation. The WET Center's Technology Innovation Evaluation (TIE) program facilitated several new clients of CIT's testing services. The CIT Hydraulics and Sprinkler laboratories have remained active during COVID and continue to provide third-party testing services to industry, researchers, private and public entities.

5. Continue staff training on water issues in California.

CIT Goal #5 Progress

- CIT staff and faculty participate in educational programs offered by our Center. Additionally, CIT uses grant and internal funds to support staff attendance at professional events such as the Irrigation Association Show, WaterSmart Innovations, the California Irrigation Association's annual conference and others.

6. Pursue large grants and contracts that provide support across CIT and WET

CIT Goal #6 Progress

- CIT participated in one "large" grant proposal in collaboration with UC Davis and Arizona State. However, other attempts were stymied. Large, multimillion-dollar

proposals typically require a collaborative (usually multi-institution) approach. CIT has a very focused set of expertise. CIT can be the lead only when the grant program's focus is aligned with CIT's expertise. Many of the RFPs seen this year called for a multidisciplinary approach where CIT would or could play an important but not singular role.

- Our strategy going forward has three facets:
 - Continue collaborating with other institutions on large proposals.
 - Identify grant opportunities with significant education and outreach potential. These grants are more aligned with Fresno State's overall mission of education.
 - Identify state funding opportunities (e.g., Prop 68) where CIT can propose significant new programs.

7. Continue to produce results in testing, research, and business development.

CIT Goal #7 Progress

- The list of events and publications in this document show CIT's progress on this goal. Of particular note: the Advanced Pumping Efficiency Program (APEP) has transitioned to a completely virtual approach to content delivery. This transition was supported by substantial investment in equipment needed to generate and deliver high quality educational content which includes live-broadcast demonstrations.
- APEP staff have initiated new modes of engagement and delivery of CIT activities focused on social media (including LinkedIn, Instagram and Twitter) and a new podcast series.
- The CIT Testing Laboratory renewed its ISO/IEC 17025 Testing and Calibrating Laboratories certification. The laboratory is now certified to test both types of smart landscape irrigation controllers and spray-sprinkler bodies. Two CIT staff are now certified to conduct internal audits per the ISO/IEC 17025 standard.

WET CENTER GOALS AND OBJECTIVES

- 1. Continue to strategically position the WET as a center of excellence for water, energy and ag technology startup enterprises. With strong positioning, successful ventures will provide jobs and opportunities to Fresno State students and graduates and to the community as a whole.**

WET Goal #1 Progress

- The WET team is continuing to work diligently to streamline its programs and services and to maximize the impact for ventures and other stakeholders. Sustainable funding and revenue generation is at the forefront of the effort of the WET team who are continually exploring opportunities.
- The WET team is utilizing an online platform to track progress on goals set forward in the strategic plan. In addition, bi-monthly meetings with the facilitator are planned to keep the momentum and focus on the planning.

- Over the past year, the WET completed rebranding the Center and its marque programs, Valley Ventures and BlueTechValley. Included in the rebranding effort were changes to comply with Fresno State’s commitment to make programs, services and activities accessible in the digital environment such as websites, web applications and online content.
 - The WET’s communication team identifies and promotes success stories and results in the monthly newsletter, on social media platforms and through press releases.
 - The WET Center’s social media profiles on LinkedIn, Instagram and Twitter continue to gain momentum with more followers, re-postings and engagement. This is an efficient way to share success stories and engage with industry and stakeholders. The follower data shown below briefly illustrates the growth of these three platforms:
 - Followers on LinkedIn have grown by 218 since May 2020, total of 3,580 followers.
 - Followers on Instagram have grown by 484 since September 2020, total of 1,192 followers.
 - Followers on Twitter have grown by 665 since January of 2020, total of 1,368 followers.
 - In addition, the monthly WET Center Chronicle newsletter provides valuable information to its readers about funding, events, articles, employment opportunities and industry trends. Some of the most significant successes that we have shared through our WET Center Chronicle in FY20/21 are our re-branding efforts, the award of a 50K EPIC Prize in December 2020, and our partnership with the California Manufacturing Technology Consulting (CMTC) this past spring to assist manufacturers in California navigate the COVID-19 pandemic.
- 2. Create a three-year plan for a sustainable funding model for the WET, including a diversified revenue model balanced between state and federal grants, fee for service and private funding.**

WET Goal #2 Progress

- The WET Center is working towards establishing a sustainable funding model to support operations and expansion. Currently, grant funding accounts for 95 percent of the WET’s revenue. In the last year, the WET has experimented with charging for services such as the accelerator program and advisory support with some success.
- The WET Center and the Fresno State Dairy are in the process of acquiring an equity stake in the WET Center member company BovControl in return for services and resources provided. The Fresno State entity New California Ventures will be used as the vehicle for the investment and equity exchange. With this pilot, the WET Center is hoping to engage in similar arrangements with other startups and thereby have the potential to create additional income for the WET Center.
- Due to the turbulent year and uncertainty the COVID 19 pandemic has created, the funding plan is still in development.

- 3. Continue to develop connections to industry, investors, academic institutions and other relevant stakeholders to further the robustness of the ecosystem.**

WET Goal #3 Progress

- Limited progress has been made on this goal in FY20-21 due primarily to the impacts of COVID-19 and the lack of opportunities to connect at events and gatherings. Connecting and expanding the ecosystem is always a top priority for the WET.

- 4. Position BlueTechValley Innovation Cluster for refunding by the California Energy Commission.**

WET Goal #4 Progress

- In April 2021, the California Energy Commission approved continued funding for the Regional Innovation Energy Clusters under its EPIC funding. The WET Center received \$5 million to continue the BlueTechValley Innovation Cluster work over the next five years. The final budgets and scope of work are being reviewed and the contract is anticipated to be executed in August 2021.

- 5. With the COVID 19 pandemic predicted to influence much of our society in the remaining 2020 and into 2021, the WET will strive to continuously provide high-impact services and programs to ventures, host virtual events and expand its network of stakeholder and connections.**

WET Goal #5 Progress

- The limitations and restrictions the pandemic created opened up new opportunities and novel ways to provide high-impact services and programs. The WET graduated its first virtual Valley Ventures cohort in the Fall of 2020, and initiated a monthly webinar series.

FY20/21 EVENTS AND ACTIVITIES

Education and technology transfer are recognized as important roles for both CIT and the WET Center. COVID-19 restrictions were in place for the entire FY20/21 eliminating our hands-on, in-person events and demonstrations. Recordings of many CIT-WET events are available on demand at <https://www.wetcenter.org/resources>. We anticipate a return to in-person events in FY21-22.

In FY20/21, CIT hosted 19 educational/technical events, with a total of 1,103 participants, primarily through the Advanced Pumping Efficiency Program (APEP). The attendance for these virtual events ranged from 7 to 278 participants. The average event drew approximately 58 participants.

In FY20/21, the WET Center hosted or co-hosted 94 educational/technical events, with a total of 2456 participants. The attendance for these virtual educational activities ranged from 6 to 353 participants. The average event drew approximately 26 participants.

Center for Irrigation Technology Events

EVENT/ACTIVITY	# ATTENDEES
July 16, 2020. SGMA - Pump Efficiency Testing for Wells webinar. APEP/AgMonitor/CIT. 2 hours	17
July 23, 2020. Basic Pump Efficiency webinar. Live webinar broadcast from the Water, Energy and Technology Lab using the Mobile Education Center. APEP/SCE/CIT. 2 hours	82
July 30, 2020. Variable Frequency Drive for Agricultural Pumps webinar. APEP/SCE/CIT. 2 hours	59
October 6, 2020. Getting Pumps Tested for Efficiency. APEP/Westlands Water District. Grower irrigation webinar. 1 hour	15
October 22, 2020. Improving Irrigation System Performance to Save Energy and Water. Live webinar with videos on distribution uniformity and irrigation efficiency. APEP/SCE/CIT. 2 hours	79
November 18, 2020. Remote Monitoring of Irrigation Systems to Save Energy and Water - Part 1. Live webinar broadcast with videos on remote irrigation system monitoring. APEP/SCE/CIT. 2 hours	63
December 3, 2020. Remote Monitoring of Irrigation Systems to Save Energy and Water - Part 2. Live webinar broadcast with videos on remote irrigation system monitoring. APEP/SCE/CIT. 2 hours	33
January 28, 2021. APEP 2021 Pump Tester Class and Meeting. 2021 program explanation, database examples, and discussion. APEP/CIT. 2.5 hours	27
February 12, 2021. Ag Technology Field Day- Innovations in Ag Irrigation. 2020 Ag Tech Field Day virtual event held in February 2021. APEP/CIT. 4 hours	278
February 25, 2021. APEP 2021 Basic Pump Efficiency. Live webinar broadcast from the WET Lab using the Mobile Education Center. APEP/SCE/CIT. 2.5 hours	110
March 4, 2021. APEP 2021 Basic Pump Efficiency - Spanish Translation. Live webinar broadcast from the WET Lab using the Mobile Education Center translated to Spanish. APEP/CIT. 2.5 hours	7
March 11, 2021. APEP 2021 Basic Pump Efficiency - Hmong Translation. Live webinar broadcast from the WET Lab using the Mobile Education Center translated to Hmong. APEP/CIT. 2.5 hours	9
March 18, 2021. Irrigation System Field Maintenance. Maintaining irrigation systems leads to good distribution uniformity and irrigation efficiency. APEP/SCE. 2.5 hours	48
March 25, 2021. Remote Pump and Well Monitoring Using the Smart Meter. Smart meter readings remotely on pump installations using an example from the University Agricultural Lab at Fresno State. APEP/SCE. 2.5 hours	61
April 15, 2021. Variable Frequency Drives for Agricultural Applications - Irrigation. Live webinar broadcast from the WET Lab using the Mobile Education Center. Field videos from the University Agricultural Lab at Fresno State. APEP/SCE. 2.5 hours	46

April 29, 2021. Understanding a Pump Efficiency Test. Videos and live webinar going through a pump efficiency test step by step. APEP/CIT. 2.5 hours	62
May 13, 2021. Basic Pump Efficiency (English). Live webinar broadcast from the WET Lab using the Mobile Education Center. APEP/CIT. 2.5 hours	39
May 20, 2021. Municipal Pump Efficiency of Potable Water. Demonstrations of moving municipal water efficiently. Live webinar broadcast from the WET Lab using the Mobile Education Center. APEP/CIT. 4.5 hours	54
June 24, 2021. Permanent Load Shifting of Agricultural Pumps. CEC/AgMonitor/CIT. 1.5 hours	14
TOTAL EVENTS – 19	1,103

Water, Energy and Technology Center Events

EVENT/ACTIVITY	# ATTENDEES
July 2, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with IEM Innovation Engineering Modular to assess technological and commercial readiness.	7
July 9, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Clean Engineering Technologies to assess technological and commercial readiness.	7
July 9, 2020. ChicoStart programs with guest speaker Eva Shepherd. Webinar with partner CleanStart.	19
July 17, 2020. Are Experienced Founders Better? WET Webinar Series.	9
July 21, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Portable Solar, Inc. to assess technological and commercial readiness.	7
July 21, 2020. Hank.re with guest speaker Zach Denning. Webinar with partner CleanStart.	21
July 23, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Absolute Energy Source, Inc. to assess technological and commercial readiness.	7
July 28, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with PowerSILO, Inc. to assess technological and commercial readiness.	7
July 30, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	10
July 30, 2020. Therme Shade 22 with guest speaker Diana Eastman. Webinar with partner CleanStart.	22
August 4, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Beijing Puquan Scientific Technology to assess technological and commercial readiness.	7
August 6, 2020. Empower Energy with guest speaker Ezra Beeman. Webinar with partner CleanStart.	20

August 13, 2020. CalSEED Heads-up for 2021 22 with guest speaker Joy Larson. Webinar with partner CleanStart.	22
August 14, 2020. ClipperCreek with guest speaker Will Barrett. Webinar with partner CleanStart.	21
August 14, 2020. Challenges and Opportunities in California Agriculture with Scott Rhodes (Investment Banker turned Grower). WET Webinar Series.	54
August 17, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Somelco/Water & Soil (W&S) to assess technological and commercial readiness.	7
August 25, 2020. Arch Nexus - BLOCK Project 21 with guest speaker Cheryl McMurtry. Webinar with partner CleanStart.	22
August 27, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	8
September 8, 2020. PEM Motion--Coming to Sacramento with guest speaker Mark Doerfer. Webinar with partner CleanStart.	32
September 10, 2020. Investment in underserved communities, DiverseCity Ventures and Tech Equity Fund with guest speaker Mariah Lichtenstern. Webinar with partner CleanStart.	24
September 10, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Agriculture High-Tech Greenhouses to assess technological and commercial readiness.	7
September 24, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	10
September 24, 2020. Momentum--Help getting government grants with guest speaker Shawn Garvey. Webinar with partner CleanStart.	35
October 1, 2020. iCatalyst Using the Empower Innovation Network with guest speaker Thomas Jensen. Webinar with partner CleanStart.	36
October 8, 2020. Leading through an undefined normal; strategic wayfinding with guest speaker Robert Gregoire, CEO of CxORE. Webinar with partner CleanStart.	18
October 13, 2020. Resources available to startups at Evolution Accelerator with guest speaker Charlie Anspach. Webinar with partner CleanStart.	25
October 16, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Moleaer to assess technological and commercial readiness.	7
October 22, 2020. BigBang! Launch. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 310 on demand views	210
October 20, 2020. CECS Student and Faculty Cleantech Activities at College of Engineering and Computer Science at Sacramento State with guest speaker Dean Lorenzo Smith. Webinar with partner CleanStart.	31
October 23, 2020. Overcoming Obstacles for a Brighter Future in California Agriculture. WET Webinar Series.	50

October 29, 2020. Starting Something that Matters + Networking Mixer. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 3 on demand views	59
October 29, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	10
November 5, 2020. Defining the Problem and Solution. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 4 on demand views	37
November 10, 2020. Making the Leap: Moving Your Idea to Business. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 43 on demand views	36
November 12, 2020. City of Sacramento Opportunities presented by upcoming building electrification ordinance in Sacramento with guest speaker Jennifer Venema. Webinar with partner CleanStart.	25
November 20, 2020. Navigating the State of the Irrigation Industry with Aric Olson, President at Jain Irrigation Inc. WET Webinar Series.	98
November 29, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	8
December 1, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with DAE Technologies to assess technological and commercial readiness.	7
December 1, 2020. FouthWave.io Accelerator with guest speaker Cheryl Beninga. Webinar with partner CleanStart.	23
December 1, 2020. Resources Are Only Valuable If You Use Them. WET Webinar Series.	24
December 10, 2020. Write to Win: Developing Your Executive Summary. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 11 on demand views	51
December 10, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	10
December 11, 2020. Finding the Right Type of Capital - Venture Capital + Alternative Venture Capital. WET Webinar Series.	23
December 15, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Flower Turbines to assess technological and commercial readiness.	7
December 16, 2020. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Vinduino to assess technological and commercial readiness.	7
January 7, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Caribou BioFuels to assess technological and commercial readiness.	7

January 14, 2021. California Energy Commission (CEC) Upcoming EPIC Building Decarbonization Challenge with guest speaker Eric Stokes. Webinar with partner CleanStart.	80
January 14, 2021. Define and Validate Your Business Model. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 52 on demand views	51
January 15, 2021. Solar application startup with guest speaker CEO of Enact Systems Deep Chakraborty. Webinar with partner CleanStart.	24
January 15, 2021. Developing Your Entrepreneurial Process in AgTech. WET Webinar Series.	26
January 18, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Country Plastics, Inc. to assess technological and commercial readiness.	7
January 21, 2021. Sacramento Metro AQMD Neighborhood EV Programs--Clean Cars 4 All with guest speaker Jaime Lemus. Webinar with partner CleanStart.	26
January 26, 2021. The Three Revolutions in Transportation with guest speaker Mollie Cohen D'Agostino, Policy Director of the 3 Revolutions Future Mobility Program at UC Davis. Webinar with partner CleanStart.	32
January 28, 2021. Rocket Fund 2021 Informational Webinar	13
January 28, 2021. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	10
January 28, 2021. Define Your Customer and Market + Customer Calls. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 52 on demand views	26
February 1, 2021. Bolton eBikes with guest speaker Kyle Chittock, CEO. Webinar with partner CleanStart.	28
February 11, 2021. Ethicli, startup software app for rating companies on ethical and sustainable activity with guest speaker Billy Hernandez. Webinar with partner CleanStart.	16
February 16, 2021. Cleantech to Market (C2M) Informational Webinar	12
February 18, 2021. Show Me the Money: Projecting and Presenting Financials. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 19 on demand views	25
February 23, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Clovis Industrial to assess technological and commercial readiness.	7
February 25, 2021. Developing Your Startup Slide Deck. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 20 on demand views	26
February 25, 2021. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	8
February 26, 2021. Leveraging the Fresno State Ecosystem featuring Nestle & BovControl. WET Webinar Series.	24

March 2, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with InPipe Energy to assess technological and commercial readiness.	7
March 3, 2021. Pitching Like a Pro: Presenting Your Startup Slide Deck. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 11 on demand views	25
March 4, 2021. Applying to 2021 CleanTech Open with guest speaker Ken Hayes. Webinar with partner CleanStart.	27
March 16, 2021. Upcoming startup events at Sac State Carlsen Center with guest speaker Cameron Law, Executive Director. Webinar with partner CleanStart.	27
March 18, 2021. Recent fundraising for new venture, Infinium with guest speaker Robert Schuetzle, CEO. Webinar with partner CleanStart.	29
March 19, 2021. Improve Your Sales in Agriculture with AgProz Founder Neil Knaak. WET Webinar Series.	9
March 23, 2021. 916 Creative ways to upcycle materials, create the circular economy with guest speaker Shira Lane, The Atrium. Webinar with partner CleanStart.	17
March 24, 2021. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	6
April 1, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with RHST Industries Inc. to assess technological and commercial readiness.	7
April 2, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with EMOD Solutions to assess technological and commercial readiness.	7
April 8, 2021. Intellectual Property Workshop. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 4 on demand views	19
April 8, 2021. Central Valley Fund and Weintraub Tobin Law firm update on PPP loans, investment outlook, keeping companies tidy with guest speakers Brian Hoblit (CVF) and Andy McCarthy (WT Law). Webinar with partner CleanStart.	19
April 13, 2021. GridSME Building cybersecurity into your products with guest speaker John Franzino. Webinar with partner CleanStart.	15
April 13, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Fulmin Energy to assess technological and commercial readiness.	7
April 16, 2021. Raising Your First Round of Capital with John-Paul ("J.P.") Lake of the KVG Fund. WET Webinar Series.	16
April 29, 2020. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	7
April 29, 2021. Dry Run Presentations (Round 3 finalists). BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis.	42

May 6, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Noria Energy to assess technological and commercial readiness.	7
May 6, 2021. Cleantech investment outlook with guest speaker John Sabya Das of Moneta Ventures. Webinar with partner CleanStart.	26
May 18, 2021. Upcoming EPIC Program funding priorities and application process with guest speaker Erik Stokes of the California Energy Commission. Webinar with partner CleanStart.	38
May 20, 2021. Tips on applying for Federal and California R&D tax credit with guest speaker Lloyed Lobo of Boast.ai and Launch. Webinar with partner CleanStart.	9
May 25, 2021. Making use of carbon offsets with guest speaker Mark Trexler of The Climatographers. Webinar with partner CleanStart.	24
May 27, 2021. BigBang! Awards Show. BigBang! Business Competition webinar conducted with partner UC Davis. Event conducted with UC Davis. 326 on demand views	353
May 27, 2021. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	9
May 28, 2021. How could you benefit by working with the Center for Irrigation Technology? WET Webinar Series.	20
June 17, 2021. Applying for an SMUD 2021 Shine Award with guest speaker Betty Low. Webinar with partner CleanStart.	15
June 24, 2021. Valley Ventures Founder's Forum. To develop and continue a virtual open forum where founders exchange experiences and challenges.	6
June 25, 2021. How to Get Grant Funding for Your Startup. WET Webinar Series.	21
June 30, 2021. BTV Technology Innovation Evaluation (TIE) Committee conducted a session with Reservoir to assess technological and commercial readiness.	7
TOTAL EVENTS – 94 events	2456

FY20/21 PUBLICATIONS AND PRESENTATIONS

Center for Irrigation Technology Publications

<i>Student Accomplishments:</i> Fresno State students are indicated with *
<ul style="list-style-type: none"> • Khezri, M., Heerema, R., Brar, G. et al. Alternate bearing in pistachio (<i>Pistacia vera</i> L.): a review. <i>Trees</i> 34, 855–868 (2020). • H. Singh, M. Khezri, S. Benes, J. Bushoven and G. Brar. 2020. Different photoperiod regimes with LED Lighting influence growth of container grown budded and non-budded citrus nursery trees. Accepted for publication in <i>Acta Horticulturae</i>. • Elgharably, A., Benes, S. Alfalfa Biomass Yield and Nitrogen Fixation in Response to Applied Mineral Nitrogen Under Saline Soil Conditions. <i>J Soil Sci Plant Nutr</i> 21, 744–755

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- Singh, A.; Quinn, N.W.T.; Benes, S.E.; Cassel, F. Policy-Driven Sustainable Saline Drainage Disposal and Forage Production in the Western San Joaquin Valley of California. *Sustainability* 2020, 12, 6362. <https://doi.org/10.3390/su12166362>
- Diaz*, J., Garcia*, J., Lara*, C., Hutmacher, R.B., Ulloa, M., Nichols, R.L., and Ellis, M.L. Characterization of current *Fusarium oxysporum* f. sp. *vasinfectum* isolates from cotton in the San Joaquin Valley of California and Lower Valley El Paso Texas. *Plant Disease*. 2020 Oct 6. doi.org/10.1094/PDIS-05-20-1038-RE.
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- Wang T., Melton FS., Pôças, I., Johnson, LF., Thao*. T., Post, K., and F. Cassel-Sharma, Evaluation of crop coefficient and evapotranspiration data for sugar beets from landsat surface reflectances using micrometeorological measurements and weighing lysimetry, *Agricultural Water Management*, Volume 244, 2021
- Pasha, D. F., Lundeen, A., Yeasmin, D., and Pasha, M.F. K. (2021). An analysis to identify the important variables for the spread of COVID-19 using numerical techniques and data science, *Case Studies in Chemical and Environmental Engineering*, Volume 3, 2021, 100067, ISSN 2666-0164, <https://doi.org/10.1016/j.cscee.2020.100067>.
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- Pasha, M. F. K., Yeasmin, D., and Valenzuela, G. (2020). "An Artificial Intelligence Model to Predict Crop Water Requirement Using Weather, Soil Moisture, and Plant Health Monitoring Data." *World Water and Environmental Resources Congress*, ASCE, May 17-21, 2020, Henderson, NV.
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Water, Energy and Technology Center Publications

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- BlueTechValley Innovation Cluster Monthly Newsletter. Water, Energy and Technology Center. BTV Times August 2020. 3,872 sent
- BlueTechValley Innovation Cluster Monthly Newsletter. Water, Energy and Technology Center. BTV Times September 2020. 3,898 sent
- BlueTechValley Innovation Cluster Monthly Newsletter. Water, Energy and Technology Center. BTV Times October 2020. 3,881 sent
- BlueTechValley Innovation Cluster Monthly Newsletter. Water, Energy and Technology Center. BTV Times November 2020. 3,857 sent
- BlueTechValley Innovation Cluster Monthly Newsletter. Water, Energy and Technology Center. BTV Times December 2020. 3,852 sent
- Water, Energy and Technology Center Monthly Newsletter (BlueTechValley Innovation Cluster). The WET Chronicle January 2021. 3,847 sent
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Center for Irrigation Technology Presentations

Student Accomplishments: Fresno State students are indicated with *

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- Maddox*, A. M., Hutmacher, R.B., Ulloa, M., Ellis, M.L. 2020. The Effects of pH and Temperature on Growth of *Rhizoctonia solani* Isolated from Symptomatic Cotton using in vitro Assays. Plant Health Conference. August 2020.
- To*, M., Westphal, A. Wenger, J., and Ellis, M. 2020. Identification and quantification of *Pratylenchus vulnus* from almond orchard soil using quantitative PCR. Plant Health Conference. August 2020.
- Urner*, M. Hutmacher, R.B., Ulloa, M., Nichols, R.L., and Ellis, M.L. 2020. Detection of Potentially Pathogenic Effector Genes in *Fusarium oxysporum* f. sp. *vasinfectum* race 4 Isolates from California. Plant Health Conference. August 2020.
- Garcia*, J., Lara*, C., Diaz*, J., Hutmacher, R.B., Ulloa, M., Nichols, R.L., and Ellis, M.L. 2020. Genotypic characterization of *Fusarium oxysporum* f. sp. *vasinfectum* isolates from current field populations in California. California Plant and Soil Conference. Fresno, CA, USA. February 4-5, 2020.
- DYP Syverson*, H Singh*, JT Bushoven, M Khezri, L Ferguson, G Brar A Novel Tandem Method of Quantitating Nonstructural Hexoses and Non Hexose Sugars in Plant Tissue Reveals Ecodormancy Release in Pistachio 2020 ASHS Annual Conference 2020
- Yeasmin, D., J. T. Bushoven., A. Mucciardi., D. Chellemi, A. Vizcarra*., and T. Xiong* (2020). A Novel Approach for Long-Term Non-Destructive Monitoring of Root Growth by Ground Penetrating Radar (GPR) in Agriculture. ASA, CSSA and SSSA Annual Meetings
- Vizcarra*, A., Yeasmin, D., Bushoven J. T. and Krauter, C. (2020). The “Hidden Half” - Use of Ground Penetrating Radar in Assessing Tree Root Morphology. 2020 California Plant and Soil Conference. American Society of Agronomy California Chapter.
- Brar, G. 2021. Overview of Springtime, Summertime and Canker Diseases in Almonds. Almond Field Day USDA-NRCS and Punjabi American Growers’ Group (PAGG)
- Brar G. 2020. Pre-harvest, harvesting, processing and grading of Pistachios. UC Pistachio Short Course
- Steinhauer*, KMC., Shrestha, A., Bushoven, JT., and K. Waselkov Environmental Conditions On Postemergence Herbicides Control Of Glyphosate-resistant Junglerice (*Echinochloa Colona*) CA Weed Science Society 2021
- Galvan*, K., Shrestha, A., and K. Waselkov - Effects of Salinity and pH on Common Waterhemp (*Amaranthus tuberculatus*) Germination CA Weed Science Society 2021
- Gabrielle Celaya-Finke*, G., Waselkov, K., Sosnoskie, L., and A. Shrestha Effects of Moisture and Salt Stress on Germination of Common Waterhemp (*Amaranthus tuberculatus*) CA Weed Science Society 2021

- Goorahoo D., F. Cassel S., C.L Muraka*, A. Unc, and G. Seepersad. 2021. Optimizing Water and Nitrogen Use Efficiency (WUE & NUE) with Airjection® Irrigation. Accepted for oral presentation at the 2020 International Nitrogen Initiative (INI2020)
- Cassel S. F., J. Samano-Monroy and D. Goorahoo. 2021. Nitrate Leaching Potential for Drip Irrigated Cauliflower (*Brassica oleracea* var. *Botrytis*) Grown on a Sandy Loam Soil. Accepted for poster presentation at the 2020 International Nitrogen Initiative (INI2020)
- Brar R K.*, T. Frnzyan*, L. Reyes-Solorio*, F. Cassel S., T. Jacobson, C. L. Muraka*, K. Steinhauer*, J. Robles, A. Venegas, D. Goorahoo, A. Mele, and A. Garcia*. 2021. Comparing yield, nutritional quality, water and nitrogen use efficiencies of deficit drip and flood irrigated sorghum (*Sorghum bicolor*) and corn (*Zea mays*) subjected to different nitrogen rates. Accepted for oral presentation at the 2020 International Nitrogen Initiative (INI2020) Conference scheduled for May 4th -7th 2020 in Berlin, Germany.
- Brar, R. K.* , T. Frnzyan*, L. Reyes-Solorio*, F. Cassel S., T. Jacobson, C. Muraka*, K. Steinhauer*, J. Robles, A. Venegas, D. Goorahoo, A. Mele, and A. Garcia**. 2021. Evaluation of sorghum (*Sorghum bicolor*) yield and nutritional quality to varying irrigation and nitrogen fertilization regimes, in comparison with corn (*Zea mays*). Proceedings, California Chapter of the American Society of Agronomy. *3rd place student poster award*.
- Muraka, C.*, L. Dejean, D. Goorahoo, and F. Cassel S. 2021. Impact of Airjection® Irrigation on Glutathione Levels in Tomatoes. Proceedings, California Chapter of the American Society of Agronomy.
- Brar R. K.* , T. Frnzyan*, L. Reyes-Solorio*, T. Jacobsen, C. Muraka**, K. Steinhauer*, J. Robles, D. Goorahoo, A. Garcia, and F. Cassel S. 2020. Evaluation of different nitrogen rates on the performance of flood-, drip-, and deficit drip-irrigated sorghum and corn. American Society of Agronomy, Crop Science, Soil Science Annual Meetings.
- Brar, R. K.* , F. Cassel, T. Jacobson, C. Muraka*, K. Steinhauer*, J. Robles, A. Garcia*, D. Goorahoo, L. Reyes Solorio*, and T. Frnzyan*. 2020. Evaluation of sorghum (*Sorghum bicolor*) performance to varying irrigation and nitrogen fertilization regimes, in comparison with corn (*Zea mays*). 4th Agricultural Research Institute Annual Meeting
- Cassel S., F., S. Ashkan, T. Thao, R. K. Brar*, A. Garcia*, D. Goorahoo, F. Melton, T. Wang, and L. Johnson. 2020. Lysimetric determination of crop water requirements for onions. 4th Agricultural Research Institute Annual Meeting
- Muraka, C.*, L. Dejean , F. Cassel S., and D. Goorahoo. 2020. Quantifying Antioxidant Glutathione Levels in Tomato Leaves and Fruits. 4th Agricultural Research Institute Annual Meeting
- ~Goorahoo, D., F. Cassel S., L. Dejean, and C. Muraka*. 2020. Effect of AirJection Irrigation on Soil Nitrogen Cycle Gene Communities. 4th Agricultural Research Institute Annual Meeting.
- Yeasmin, D., (2020). A Ground Penetrating Radar (GPR) Based Evaluation of Rootstock Response to the Application of Fertilizer of Natural Origin in Orchards and Vineyards to Promote Root Vigor for Long Term Economic Viability. Oral Presentation at the Virtual Agricultural Research Institute Principal Investigator Meeting, October 23, 2020.
- Yeasmin, D. (2020). Almond Water Stress and Yield Analysis through Soil, Plant and

Image based Technologies for Sustainable Almond Production. Oral Presentation
Lightening Talk at the Virtual Agricultural Research Institute Principal Investigator
Meeting, October 23, 2020.

- Pasha, M. F. K., Srinivasamurthy, N., Yeasmin, D., and Valenzuela, G. (2020).
“Numerical Techniques to Analyze Crop Water Requirement Using Weather and Soil
Moisture Data.” American Society of Agricultural and Biological Engineers, ASABE,
Virtual Annual Meeting, July 13-15, 2020.
- Bañuelos, G. S. 2021. Alternative crops with poor quality waters. UC Davis Extension,
Sacramento California
- Bañuelos, G. S. 2021. Use of saline waters in pistachios. Pistachio Conference, Fresno,
California
- Bañuelos, G. S. 2021. Using poor quality waters in pistachio production. Panoche
Drainage District, Firebaugh, California
- Bañuelos, G. S. 2020. Physiological responses in pistachios irrigated with saline waters.
USDA-ARS, Parlier, California
- Banuelos, G.S. 2021. Growing guayule in poor quality soils. USDA-ARS, Parlier and
Albany, California

THE UNIT'S FINANCIAL STATEMENT

CIT CATI Financial Statement 2020-2021

PROJECT NAME	P.I.	Starting Budget
ARI - Identification of Guayule - 350467	Todd Lone	\$254,517.00
ARI - Saline Irrigation on Soil - 350546	Gurreet Brar	\$145,914.00
ARI - Saline Water on Pistachio - 350584	Gurreet Brar	\$254,517.00
ARI Improving water and Nitrogen - 350796	John Bushoven	\$55,325.00
ARI Ground Water Sustainability - 350840	Charles Hillyer	\$57,779.00
ARI Automating Pistachio - 350765	Thanos	\$64,825
NIFA Plan for Groundwater Management - 350685	Sarge Green	\$30,000.00
ARI - Evaluation of Sorghum Tolerance - 350464	Florence	\$126,567.00
Nutrient quality Forages '19 - 350468	Florence	\$448,000.00
ARI - Crop Water for Onion -350549	Florence	\$148,407.00
ARI - Lysimetric ET - 350583	Florence	\$449,871.00
ARI- The organic production of Agretti - 350751	Kaomine Vang	\$120,520.00
ARI - Smart Data in Ag. - 350462	Dilruba Yeasmin	\$72,946.00
ARI - Water Stress in Almonds - 350544	Dilruba Yeasmin	\$111,654.00
ARI- Ground Penetrating Radar	Dilruba Yeasmin	\$119,492.00
ARI- Water Smart Planning - 350759	Dilruba Yeasmin	\$78,403.00
ARI- Smart Farm Cutting Edge Field - 350758	Fayzul Pasha	\$91,256.00
Develop Mobile Decision on Nitrate - 350647	Kaomine Vang	\$125,918.00
ARI Identify Assess Fusarium '21	Margaret Ellis	\$75,766.00
ARI Airjection In Vegetables '20 - 350548	Dave Gorahoo	\$145,993.00
ARI LYSIMTER STUDIES:DET EV'23 - 350842	Florence	\$127,064.00
ARI - Smart Data in Ag. 350642	Florence	\$50,000.00
CDFA - Precision Irrigation Pistachio	Shawn Ashkan	\$116,769.00
CPRB Trees CA Pitschios Board (Equip) - 300403	Gurreet Brar	
Roger B. Jensen Professorship - 300380	Gurreet Brar	
Brar Research Account - 300394	Gurreet Brar	
PG&E - APEP VII - 350798	Benjamin Francis	\$1,280,050.00
PG&E - APEP VII Pump Testers - 350799	Kaomine Vang	\$447,000.00
Water Use & Drought Resistance Test - 350682	Timothy Jacobsen	\$10,100.00

AI Model for Estimating Crop Water - 350745	Fayzul Pasha	\$49,332.00
CV Energy Innovation Cluster : BTV - 350454	Helle Petersen	\$5,000,000.00
BTV Ecosystems - 350613	Helle Petersen	\$75,000.00
EDA- CV Reg Innov Invest Fund'21 - 350694	Helle Petersen	\$300,000.00
Fababean Germplasm '21 - 350631	Ranjit Riar	\$13,635.00
Nile Garden Drinking Water '19 - 350721	Sarge Green	\$87,065.00
DWR - On Farm Crop Use - 350634	Florence	\$30,000.00
Satelite and UAS Imagery - 350813	Florence	\$20,000.00
Long Term Saline Irrigation '21 - 350794	Kaomine Vang	\$74,000.00
Efficient Media Filtration '20 - 350744	Kaomine Vang	\$44,000.00
Irrigation Innovation Consortium	Charles Hillyer	\$60,000.00
Greenhouse Gas Emissions - 300079	John Bushoven	\$150,000.00
CRITICAL AREAS: CA ORCHARDS '21 - 350861	Dilruba Yeasmin	\$38,286.00
Adv. Pumping Eff. Prog VIII'21 - 350870	Kaomine Vang	\$499,995.00
CCGGA-Wilt Seedling Diseases21	Margaret Ellis	\$52,500.00
CCGGA-WILT SEEDLING DISEASES22 - 350874	Margaret Ellis	\$52,500.00
WET Center Hands on Learning - 300698	Helle Petersen	
Data collection and Analysis for Novel sub-surface Irrigation	Charles Hillyer	\$54,500.00

CIT Grant and Contract activity for FY20/21

Fund Fdescr	Class Fdescr	Account Fdescr	Current Budget	Actuals	Balance Available
90000 - TF-CSU Operating Fund	00000 - Default Sub-Class	604813 - Telephone Equipment Charges		0.00	0.00
		604814 - Telephone Line Charges		0.00	0.00
		660815 - Plant Operation Services		1,072.42	(1,072.42)
		660898 - Prior Year Budget Carry Forwrd	82,481.73	0.00	82,481.73
	27741 - CATI/CIT/Admin	601921 - Management & Supervisory Sals	142,097.00	102,414.00	39,683.00
		601931 - Regular Staff Salaries	141,924.00	139,458.14	2,465.86
		601961 - Temporary Help		47,388.24	(47,388.24)
		604812 - Cellular Telephones		3,300.00	(3,300.00)
		604813 - Telephone Equipment Charges		1,077.84	(1,077.84)
		604814 - Telephone Line Charges		1,978.80	(1,978.80)
		613001 - Contractual Services	122,402.00	136,467.36	(14,065.36)
		660001 - Postage and Freight		430.41	(430.41)
		660815 - Plant Operation Services		3,526.76	(3,526.76)
		660898 - Prior Year Budget Carry Forwrd	46,768.00	0.00	46,768.00
90000 - TF-CSU Operating Fund Total			535,672.73	437,113.97	98,558.76
			535,672.73	437,113.97	98,558.76
			535,672.73	437,113.97	98,558.76

WET Grant and Contract Activity for FY20/21

Fund Fdescr	Class Fdescr	Account Fdescr	Current Budget	Actuals	Encumbrances	Balance Available
496A6 - WET Members Incubator Rent	00000 - Default Sub-Class	613001 - Contractual Services		2,045.50	0.00	(2,045.50)
		660003 - Supplies and Services		18,812.00	0.00	(18,812.00)
		660090 - Expenses - Other		0.00	6.27	(6.27)
		660815 - Plant Operation Services		291.28	0.00	(291.28)
		660818 - Financial Services Support		618.00	0.00	(618.00)
496A6 - WET Members Incubator Rent Total				21,766.78	6.27	(21,773.05)
				21,766.78	6.27	(21,773.05)
				21,766.78	6.27	(21,773.05)

A DESCRIPTION OF SPACE AND EQUIPMENT UTILIZATION

Office and meeting space for CIT staff is located in the main office building (southeast corner of Chestnut and Barstow), the WET laboratory (southwest corner of Chestnut and Barstow), the Sprinkler Testing building, and the CIT Research building (formerly IFA) (Figure 1). CIT research staff, along with the Advanced Pumping Efficiency Program (APEP) are housed in the CIT Research building.

The WET Center building (on the southwest corner of Chestnut and Barstow) has facilities used for incubation, acceleration, including seven tenant offices and one of CIT's hydraulics laboratories. The WET North (directly across the street from the WET Center) provides 2,700 sq. ft. which includes six tenant offices, a WET Center staff office, plug-and-play space, meeting, and educational space.

CIT manages three hydraulic laboratory facilities designed to provide a range of testing capabilities including sprinkler testing, drip/micro testing, valve and filter testing, pump testing, and custom testing and performance certifications. CIT operates a fleet of six trucks, one car and two Mobile Education Center trailers used to support educational program delivery. A third trailer has been converted to a Mobile Education Studio which allows the CIT team to stage quality remote education events from field sites. The live demonstrations have been incorporated into several webinars this fiscal year including the February 12 AgTech Day: Innovations in Ag Irrigation Technology Demonstration and Showcase that attracted 278 attendees.



Figure 1. An aerial view of the of the CIT & WET physical facilities

CIT also manages seven acres of the University Agricultural Laboratory. These acres are allocated to individual research projects on an annual basis. Figure 2 shows the space allocation for the 2020 crop year and Figure 3 shows the space allocation for the 2021 crop year.

CIT Field Plots (2020)

2020 CIT Plot allocations

- ✦ Turf plots
- ✦ Elephant Grass
- ✦ ORCAL
- ✦ ORCAL2
- ✦ Nitricity
- ✦ Stoller-Pepper
- ✦ Nitrate Leaching-Aldo
- ✦ Stoller-Tomato
- ✦ Corn/Sorghum-Ramandeep
- ✦ Onion- Johnathon
- ✦ ARI Develop Mobile Nitrate
- ✦ Nitricity Solar Panel
- ⊕ Main Water Supply 1
- ⊕ Water Supply 3
- ⊕ Water Supply 2
- ⊕ Water Supply 4
- ⊕ Water Supply 5
- ✦ Lettuce-Pomona
- ✦ farm(x) ?
- ✦ Garden



Figure 2. CIT space allocation on the University Agricultural Laboratory for the 2020 crop year.

CIT Field Plots (2021)

2020 CIT Plot allocations

- ✦ Turf plots
- ✦ Elephant Grass
- ✦ Nitricity
- ✦ Nitricity Solar Panel
- ⊕ Main Water Supply 1
- ⊕ Water Supply 3
- ⊕ Water Supply 2
- ⊕ Water Supply 4
- ⊕ Water Supply 5
- ✦ Stoller Tomato
- ✦ Stoller Pepper
- ✦ Innovak Global
- ✦ Nitrogen Leaching
- ✦ Orcal
- ✦ Not allocated
- ✦ farm(x) ?
- ✦ OrCal planter boxes
- ✦ Garbanzo N application
- ✦ Umida



Figure 3. CIT space allocation on the University Agricultural Laboratory for the 2021 crop year.

In addition to the resources shown in Figure 2 and Figure 3, the Jordan Agricultural Research Center (JARC) robotics laboratory is also allocated to CIT researcher Dr. Dilruba Yeasmin. Health concerns relating to COVID have limited utilization of this space over the past year. We expect this space to be fully utilized in the coming year.

LISTING OF THE ADVISORY COMMITTEE MEMBERSHIP

CIT Advisory Committee

CIT developed a plan to constitute and recruit an advisory committee. As anticipated, the recruiting effort has been severely hampered by COVID restrictions limiting the opportunities to meet professionals who would be a good fit for the committee.

The anticipated composition of the committee has not changed. We expect the committee will have the following:

- Ag Producer: one or more grower in the SJV
- Industry: one or more person from an irrigation manufacturing company with a significant presence in the SJV
- Retail/Distributor: one or more person from retail or distribution outlet
- State Government: or more persons from DWR and CEC
- Federal Government: or more persons from NRCS or USBR
- Academic: one or more researcher, active in irrigation, from outside the CSU system

Term limits: 2 years

WET Center Technical Advisory Committee

The WET Center will not have an Advisory Committee focusing solely on WET activities. Representatives from the Advisory Committee for the Center for Irrigation Technology will encompass activities related to the WET Center.

The scope of work for the BlueTechValley Innovation Cluster, funded by the California Energy Commission (CEC), mandates the creation of a Technical Advisory Committee (TAC). The objective of the committee is to provide guidance in project direction that may include scope, methodologies, timing, and coordination with other projects and programs. The TAC committee is being restructured partly in response to the expansion of the CEC Ecosystem, which now includes a few new programs. To date, the following individuals have agreed to serve on the new TAC:

- Gary Simon, CEO, CleanStart
- Eva Shepard, Executive Director of Chicostart and Director of the Center for Entrepreneurship at CSU Chico
- Richard Chapman, President and CEO, Kern Economic Development Agency

With the renewed funding from the California Energy Commission, the TAC committee will be re-evaluated and possibly expanded.

ANY CHANGE IN GOVERNING POLICIES

CIT Change in Governing Policies

No significant governing policy changes were made during the fiscal year, however as a result of eliminating ICWT, operational procedures were developed to integrate the common goals of CIT and the WET Center. The strategic planning sessions held in January 2020 were instrumental in getting this process started. Modifications will be made moving forward as needed and/or based on Advisory Committee recommendations. A current organization chart is appended.

WET Change in Governing Policies

Changes in the governing policies of the WET Center reflect its incorporation into the Center for Irrigation Technology and the Jordan College of Agricultural Sciences and Technology. Refer to the FY18/19 Center for Irrigation Technology Annual Report for details.

FY21/22 GOALS AND OBJECTIVES

CIT Goals and Objectives

1. Continue to strive for organizational excellence

CIT will continue to transform its internal procedures and tools for project support and post-award administration. In particular, CIT has prioritized the following internal goals for FY21/22:

- Project and account tracking will become more transparent and accessible to faculty.
- Empower faculty to take more responsibility for procedural tasks (i.e., travel claims). This will enable CIT to service more projects with the same level of staff support.
- Collaborate with ORSP on developing the new PIF spreadsheet.

2. Develop a software testing service for irrigation-related applications that supports the goals of the agriculture and landscape community in California particularly and the US generally.

CIT will use the Gumz Trust to fund a software developer for three years. This person will update several obsolete applications (SPACEPro, Waterright.org, instrumentation software). This person will also participate in developing grant applications focused on establishing a software testing service with the expectation that this person will be internally supported (i.e., fee-for-service) after three years.

3. Maintain engagement in standards development bodies.

This goal has always been a central component of CIT's activity and will continue as such. Over the 21-22 FY, we will take a more proactive approach to recruiting technical experts to participate in standards development.

4. Continue to reinvigorate industry relationships.

Key industry trade shows will be in-person events in 2021 such as the WaterSmart Show and the Irrigation Association Show. Events like these have always been a key component to establishing industry connections and relationships. Recent and planned changes in the Irrigation Association's leadership will create potential (both good and bad) changes in our industry's prime professional association. CIT will remain engaged with the IA and will continue to provide support to the IA during the transition.

5. Continue professional development opportunities for staff and students.

This goal includes training on a wide range of subjects that build the knowledge base and skill sets of staff and students. The training will vary depending on the staff/students involved.

6. Pursue large grants and contracts that provide support across CIT and WET

Given our experience detailed in the first section, our strategy going forward has three facets:

- Continue collaborating with other institutions on large proposals
- Identify grant opportunities with significant education and outreach potential. These grants are more aligned with Fresno State's overall mission of education.
- Identify state funding opportunities (e.g., Prop 68) where CIT can propose significant new programs.

7. Continue to produce results in testing, research, and business development.

In pursuit of this goal, CIT will work towards greater integration and collaboration with researchers and research teams across Fresno State and the CSU System. This activity will include active contributions to:

- Adoption and refinement of the JCAST Asset Database
- JARC space use policy
- Participation in the IRB

WET Center Goals and Objectives

1. Update the strategic plan for the WET Center with a five-year timeframe in mind. The overall goal is to establish the WET Center as a widely recognized entity for water, energy and ag tech commercialization in California and beyond.
2. In connection to the strategic plan, create a five-year plan for a sustainable funding model for the WET Center, including a diversified revenue model balanced between state and federal grants, fee for service and private funding.
3. Continue to develop connections to industry, investors, academic institutions and other relevant stakeholders to further the robustness of the ecosystem.
4. Repopulate the WET Center with startups and increase the membership base.
5. Encourage the WET team to seek out speaking and presentation engagements to further the mission of the WET Center.

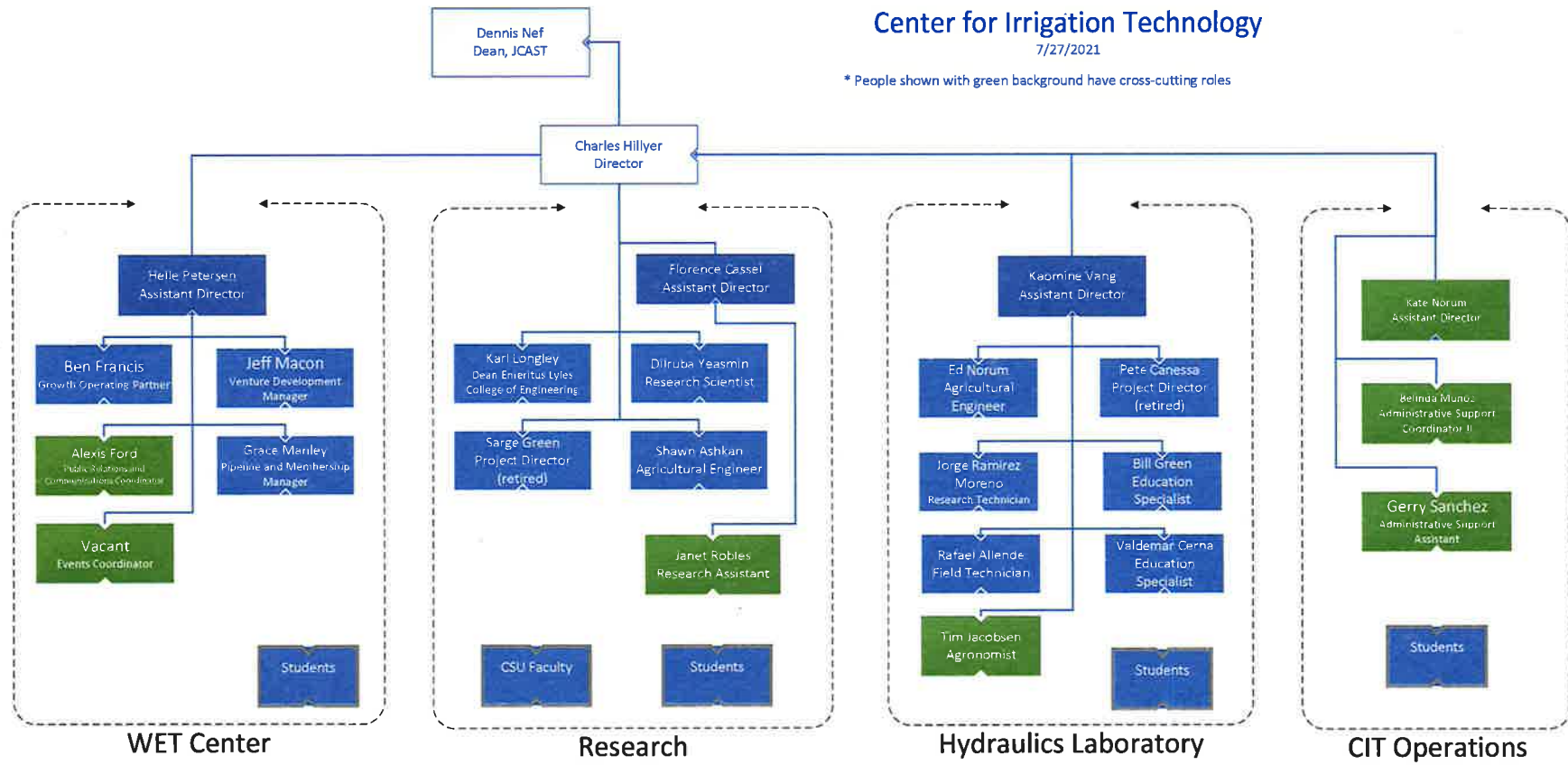
**REQUEST FOR RENEWAL OF THE CENTER FOR IRRIGATION TECHNOLOGY
FOR FY20/21**

(APM 110 form) is appended.

Center for Irrigation Technology

7/27/2021

* People shown with green background have cross-cutting roles



ANCILLARY UNIT STATUS FORM

Name of Ancillary Unit: Center for Irrigation Technology
 Director of Ancillary Unit: Charles Hillyer
 Department & College / School / Division: Jordan College of Agricultural Sciences and Technology

<input type="checkbox"/> New Application Applying for Initial Approval <i>(See APM 110)</i> http://www.csufresno.edu/aps/apm/110.pdf	<input checked="" type="checkbox"/> Renewal Application Status of Ancillary Unit: <input type="checkbox"/> Active <input type="checkbox"/> Continued Developmental Year, ___ of 3 <input type="checkbox"/> Inactive & Applying for Renewal	<input checked="" type="checkbox"/> Annual Report Enclosed
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ASSIGNED TIME: Is assigned time involved for faculty in your department or program? Yes No

Name of Faculty Member	Semester Assigned	Number of WTUs
<input type="checkbox"/> Assigned Time Approved <input type="checkbox"/> Assigned Time Not Approved	X _____	_____
	Signature of Department Chair / Program Coordinator	Date
<input type="checkbox"/> Assigned Time Approved <input type="checkbox"/> Assigned Time Not Approved	X _____	_____
	Signature of Dean	Date

ADDITIONAL SIGNATURES:
 If assigned time is given to faculty and/or staff outside the Ancillary Unit's home department, please list the individual's name below, the amount of assigned time granted, and obtain the signatures of the individual's Department Chair and Dean. **Please attach additional signatures if necessary.**

Name: _____	Semester & WTUs: _____
Home Dept: _____	Home College/School: _____
Dept Chair: _____	Dean: _____
X _____ <i>Dept. Chair's Signature & Date</i>	X _____ <i>Dean's Signature and Date</i>

WORKSHOPS / NON-CREDIT COURSES / CERTIFICATES:
Centers/ Institutes cannot offer courses for university credit. Please identify all non-credit courses and any certificates offered by the unit. Attach additional pages if necessary. _____

APPROVALS:

Chair, Recommend Approval? Yes No
 X _____
Dept. Chair's Signature & Date

Dean, Recommend Approval? Yes No
 X Dr. Dennis Ho 8/5/2021

Dean's Signature and Date

Provost and Vice President for Academic Affairs, Recommend approval? Yes No
 X _____
Provost's Signature _____
 Date

President: Approved, 1Year Approve Continued Developmental Period Not Approved
 X _____
President's Signature _____
 Date

Other _____

