

PATHS: Career Pathways to Advance the Trades in HVAC Services



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DE-EE0009738

Project Summary

Objective and outcome

Pilot a program in Inland Empire region of Southern California that enables contractors and technicians to improve the performance of residential HVAC systems by:

- using tools to take accurate readings, and assess whether they took them correctly,
- interpreting results, figuring out what they mean (options), and
- communicating to homeowner what needs to be done...
- While promoting a fruitful career path for a broader and more diverse set of workers.

Team and Partners

Frontier Energy, Inc., Kristin Heinemeier,
Principal Investigator

Engage! Strategies: James Morante
California Community College Liaison, Industry
Recruitment

Institute of Heating & Air Conditioning, Inc, Bob
Wiseman

Training Contractors and Technicians



Stats

Performance Period: 10/1/2021 – 12/31/2024

DOE budget: \$700k

Milestones:

- Develop Curriculum for Community College Students and Contractors/Technicians
- Provide Training for Community College Students
- Provide Training for Contractors and Technicians
- Develop and Disseminate Recruitment Materials
- Provide a PATHways Mentoring Program

Problems We are Aiming to Solve

- **Lack of trained technicians:**
 - Residential HVAC installers and service technicians are retiring faster than they are being recruited
- **Quality of HVAC systems/performance:**
 - Particularly with more complicated heat pump systems, performance is often far from optimal.
 - Many contractors are not aware of the impact of their work.
- **Unemployment and underemployment:**
 - Many disadvantaged communities have the highest unemployment rates.

Alignment and Impact

- **Outcomes of the project contribute to EERE/BTO goals**
 - Residential HVAC uses about 6% of ALL energy in California
 - Over 80% of all homes that will exist by 2030 are already built, so the focus is on existing homes.
 - But over half of the HVAC systems existing now will be replaced between now and 2030.
 - 2/3 of the HVAC systems that will exist by 2030 will be installed between now and then.
 - Installing these systems correctly and going back to provide tune-ups (maintenance) can improve performance by at least 30%.
 - HVAC Technicians are the Tip of the Spear on achieving GHG goals!

Alignment and Impact

- Prioritize Equity, Affordability, and Resilience
- For example, in Inland Empire:
 - 4.6 million residents: 11% percent of CA population.
 - A large portion in disadvantaged communities.
 - High unemployment: 10.4% during pandemic, some communities as high as 17.8%.
 - 65% of population is LatinX
 - Of LatinX men, 71% have no college and 37% have no HS diploma
 - But lots of growth!

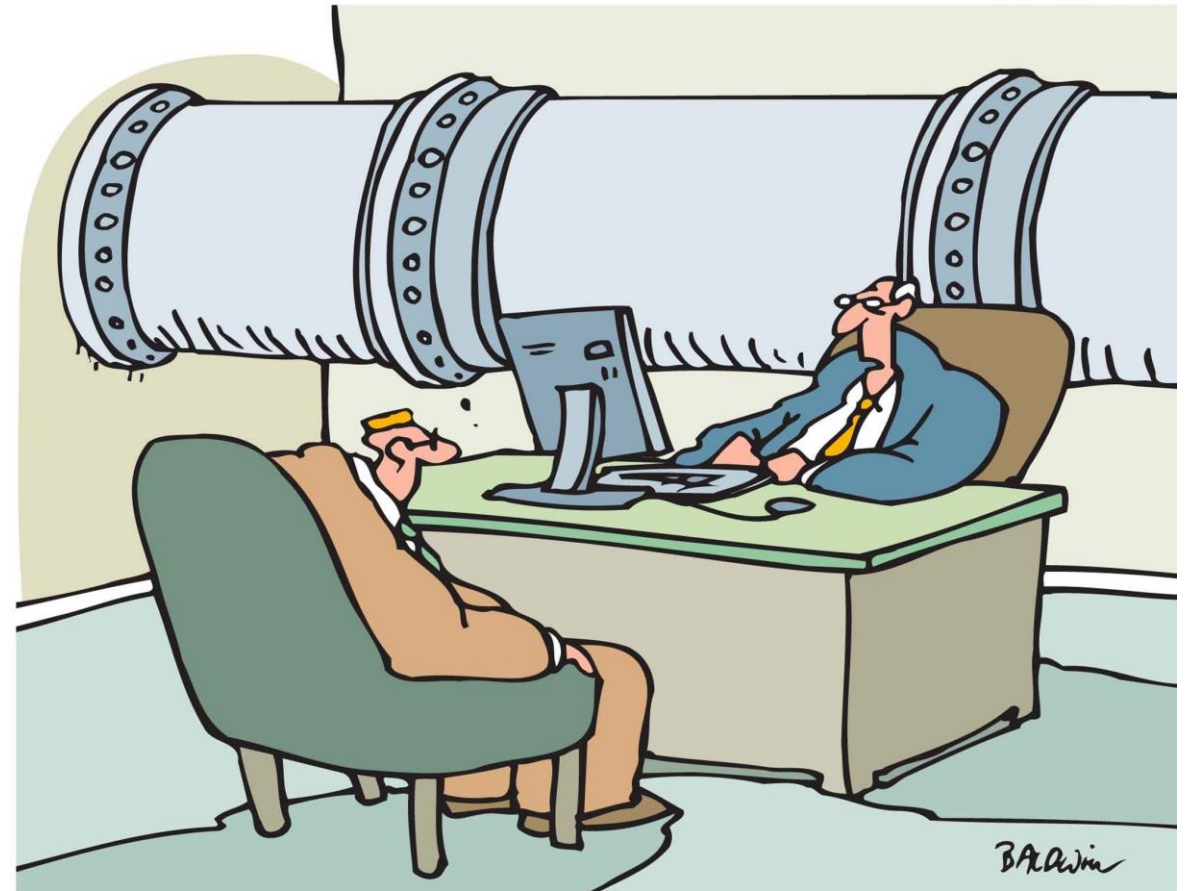


Approach

- **Aims to enable contractors and technicians to improve the performance of residential HVAC systems by:**
 - using tools to take accurate readings, and assess whether they took them correctly,
 - interpreting results, figuring out what they mean (options), and
 - communicating to homeowner what needs to be done...
- **...and also to promote a fruitful career path for a broader and more diverse set of workers.**
- **Pilot of the program in the Inland Empire Region**

Approach:

Workforce Pipeline PATH



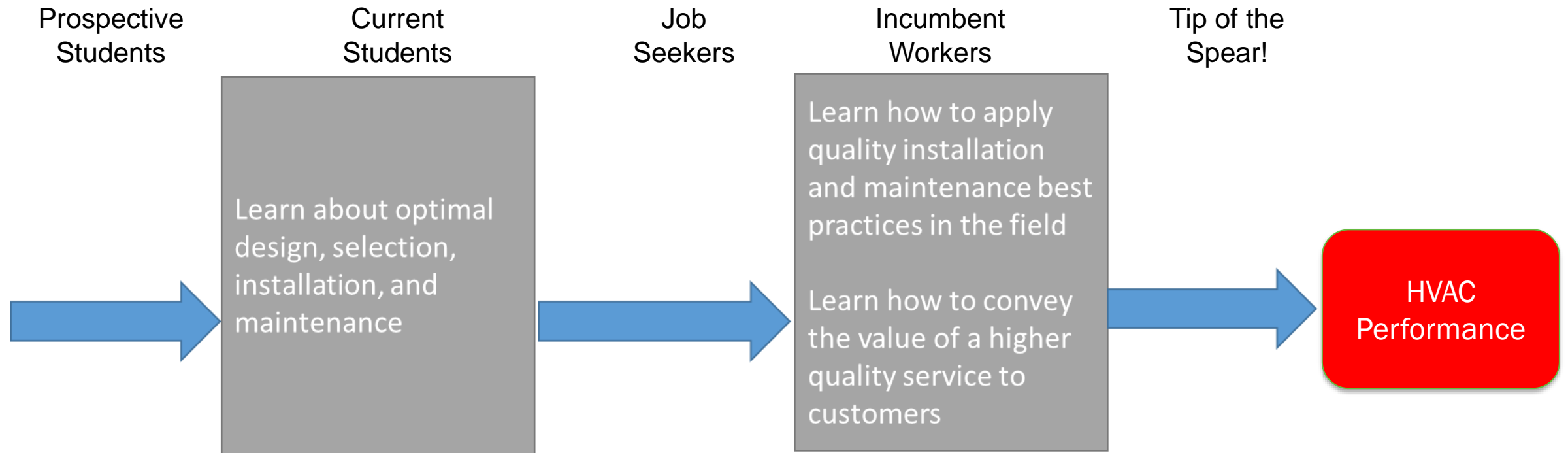
“Mind you, I’m not responsible for the entire pipeline
– just the section that flows through my office.”

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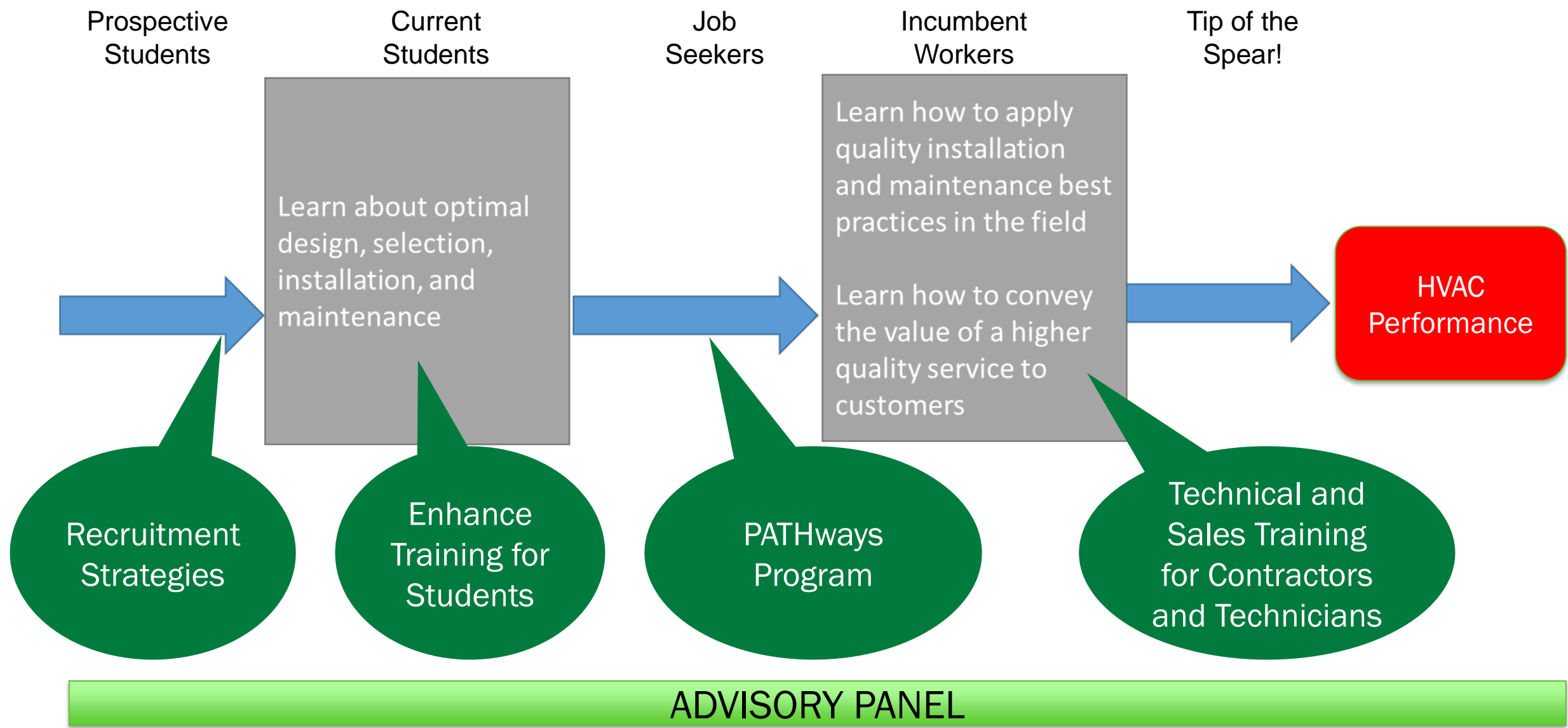
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BALDWIN

Approach



Approach



Approach: Recruitment Strategies

- **Strategy Development & Pilot Preparation**
 - Engage Advisory Group Membership, CBOs, Community Colleges
 - Create Three Concepts
 - Produce Pilot from Approved Concept
 - Outline Campaign Details: Timeline, Production Schedule, Final Messaging, Scope
- **Digital Assets:**
 - Video Ads (~ 30 Seconds)
 - Video Social Teasers (~ 15 Seconds)
 - Social Banner Ads (Photo & Graphics)
 - Testimonial Videos
 - PDF Lead Magnet (Downloadable & Hard Copy)
- **Social Media: (TicTok/Facebook/Instagram)**
 - Open & Grow Accounts + Organize Digital Assets
 - Create Final Posting Calendar & Scheduling
 - Confirm and/or Create Landing Page (Pending Additional Funding)
- **Dissemination and Sustainability**
 - Daily Follows / Comments / Likes
 - Engage Advisory Committee, Industry, Trade Associations, CBOs
 - Identify High Profile Influencers

Approach: Enhance Training for Students

- **Supplement to Existing Courses**
 - AIR-61A: Beginning AC and Refrigeration
 - AIR-61B: Advanced AC and Refrigeration
 - AIR-77: Energy Conservation Methods for HVACR
 - AIR-83: All Weather Heating and Cooling Systems
- **Add Key Concepts That Affect Performance**
- **“Ah-ha!” Moments to Convey Importance**

Approach: Career PATHways Program

- Pair students with contractors (potential employers) or technicians (role models).
- Give participating students a feeling for what this career can offer and guidance as they navigate graduation and job search.
- Give participating contractors and technicians exposure to potential future employees, and an opportunity to give back to the industry.

Approach: Technical and Sales Training for Contractors and Technicians

- Provide eight hours of training to incumbent contractors and technicians.
 - Using tools to take accurate readings, and assess whether they took them correctly, interpreting results, figuring out what they mean (options), and
 - Communicating to homeowner what needs to be done...
- Utilize Visual Service...tool developed by the industry itself.
 - Bringing Bluetooth instrument readings together in one place
 - Gaining insight into how they work together and what they mean
- Train 25 individuals at up to five firms.



Progress and Future Work: Recruitment Strategies

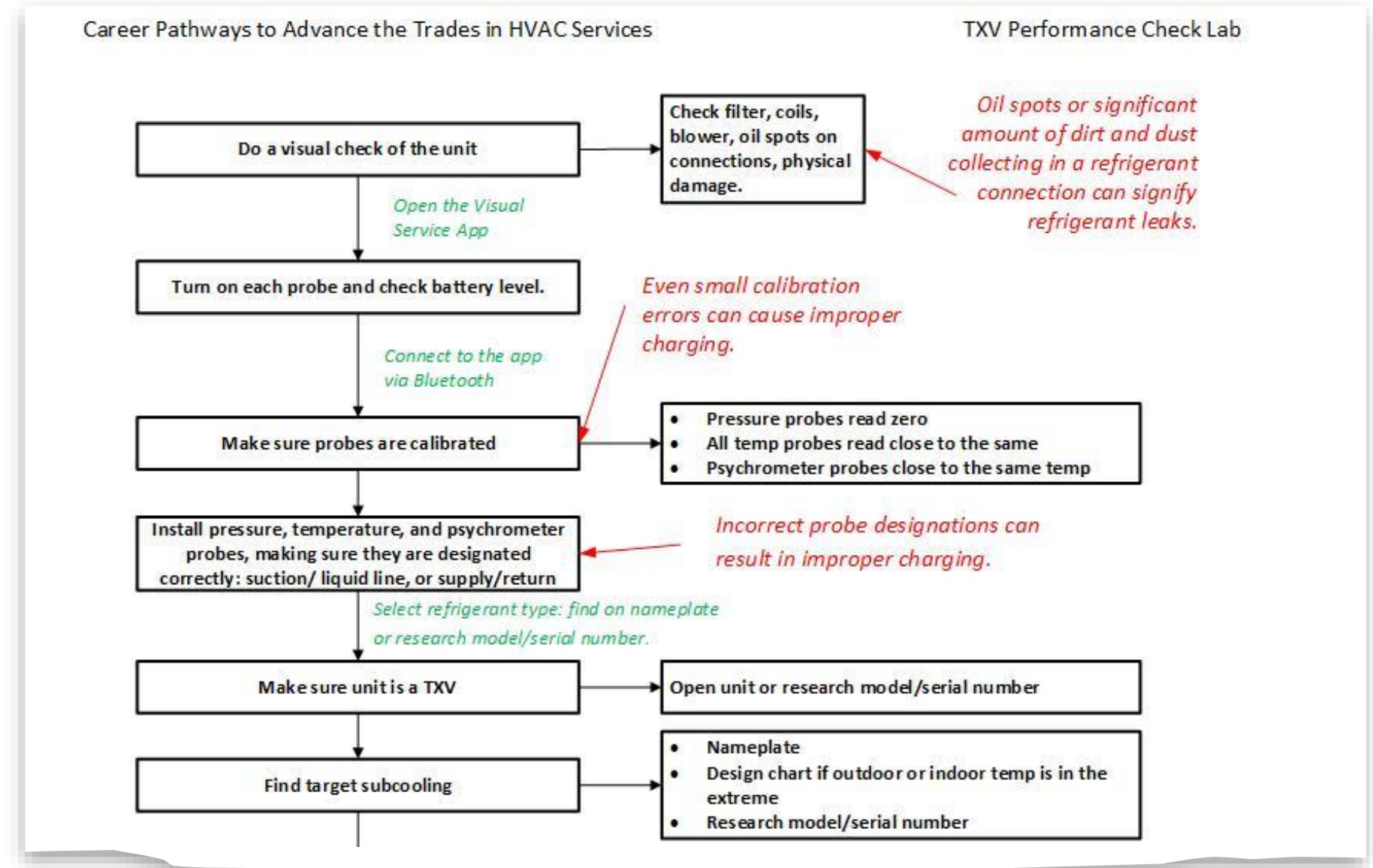
- **Progress to date:**
 - Identified messaging
 - Developed storyboards
 - Starting to produce videos
- **Upcoming:**
 - Complete videos
 - Develop landing pages with more in depth material
 - Use Advisory Panel for dissemination

Messaging:

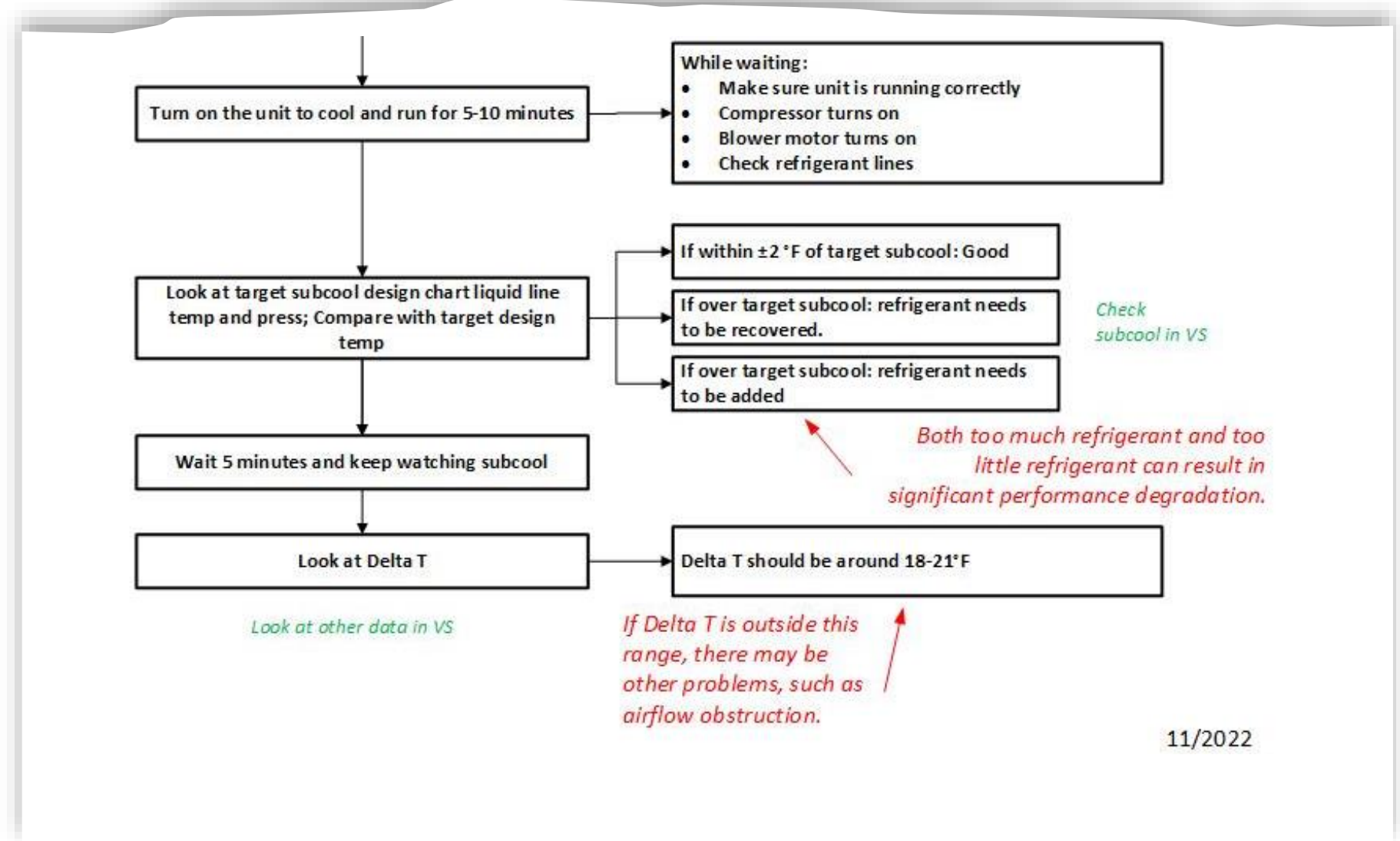
- In-demand jobs and careers
- High-quality and accessible training programs are in your backyard
- There's much more to HVAC than technician jobs
- Is it a dirty job? Grit and strength
- Tomorrow's Green Economy, Today



Progress and Future Work: Enhance Training for Students



Progress and Future Work: Enhance Training for Students



Progress and Future Work: Enhance Training for Students

Progress To Date:

- **Presented to 30 Students**
- **Lab Exercises**
 - System Evacuation
 - Refrigerant Recovery
 - TXV Performance

Possible Upcoming Exercises:

- Proper charging
- Air Source Heat Pump Operation
- Troubleshooting Heat Pump
- Duct leakage testing
- Static pressure reading
- Cooling Coil airflow verification
- Checkout system and identify opportunities to improve performance

Progress and Future Work: Career PATHways Program

- **Beginning to Define Program**
- **Will begin to recruit participants, host introductory meeting, and ask for participation commitments**
 - Get together or hold phone calls or virtual meetings every month or two.
 - School visits from contractors and technicians.
 - Invite students to shadow technicians as they work.
 - Organize trips to local trade conferences and meetings.
 - Support social gatherings, such as meals, golf outings, or awards dinner.
 - Work together on a project and present what they did.
- **Seeking co-funding to provide special support to students**
 - Stipends to help them get a good start in their first job, or instruments to show potential employers that they are committed to the trade.

Progress and Future Work: Technical and Sales Training for Contractors and Technicians

- **Progress To Date:**
 - Curriculum Complete
 - Beginning to Recruit
- **Upcoming:**
 - Training for 25 people in 4 firms

Career Pathways to Advance the Trades in HVAC Services—Free Training Program

We are currently recruiting participants in a pilot training program, with a goal to advance residential HVAC skills in San Bernardino and Riverside counties.

Subject of Training:

- Session 1: How to take accurate measurements and use them in installing or adjusting HVAC systems.
- Session 2: How to use measurements to communicate to homeowners about their options.

Qualified Participants:

Up to ten individuals can participate in training program:

- Three service / maintenance technicians
- One installer
- Up to six others, including possibly owners, service managers, installation managers, or sales/comfort advisors

Act now...only 4 firms will be able to participate. If you think this might be right for you, contact us at...

You will receive, free of charge:

- A full suite of state-of-the-art digital Fieldpiece and Energy Conservatory Tools for up to three service techs and one installer.
- Two 4-hour hands-on technical trainings for up to ten members of your team
- Monthly support from program instructors



Tools you will receive:

- “Triage” tools for three technicians, including:
 - Charge and air kits including psychrometers, pressure probes, and pipe clamps
 - Manifold
 - Three meters
- Installer tools, including:
 - TrueFlow Grid
 - Manometer
 - Digital Micron Gauge
 - Scale
- Four one-year subscriptions to Visual Service

Thank You

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REFERENCE SLIDES

Project Execution

	2022				2023				2024			
Planned Budget	\$241,742				\$271,759				\$186,499			
Spent Budget	\$136,154				\$375,141				\$188,705			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PAST WORK												
Milestone 1: First AC Meeting	♦	♦										
Milestone 2a: Initiative Model Plan		♦	♦									
Milestone 2b: Initial PATHS Website		♦	♦									
Milestone 3: Initial Industry Recruitment materials design			♦									
Milestone 4(1)/GNG 1.1: Initial curriculum for student training				♦								
Milestone 4(2): Initial curriculum for technical contractor and technician training				♦								
Milestone 4(3): Initial curriculum for soft-skills contractor and technician training				♦								
Milestone 5/GNG 1.2: First student training initiated				♦								
CURRENT/FUTURE WORK												
Milestone 6/GNG 2.1: Student training completed					♦							
Milestone 7: Contractors or technicians committed to PATHways Program					♦							
Milestone 8b: Commitment to distribute industry recruitment materials								♦				
Milestone 8a/GNG 2.2: Webinar to get feedback on recruitment material								♦				
Milestone 9(1&2)/GNG 2.1: Technical and soft-skills training for five HVAC firms							♦					
Milestone 10a/GNG 2.3: Evaluation Criteria memo						♦						
Milestone 10b/GNG 2.4: Evaluation Report								♦				
Milestone 11: Revision plans for curriculum, recruitment materials, Model Plan								♦				
Milestone 12: Final versions of curriculum, recruitment materials, Model Plan									♦			
Milestone 13(1)/EPG: Curriculum and Industry Recruitment materials complete										♦		
Milestone 13(2): Curriculum and Industry Recruitment materials disseminated										♦		
Milestone 14a/EPG: Trainers enrolled in ongoing PATHS Initiative											♦	
Milestone 14b/EPG: Updated Paths Initiative Plan											♦	
Milestone 15: Lessons Learned and Best practices Powerpoint and report												♦

Team

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- James Morante, Engage! Strategies:
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- Bob Wiseman, Institute of Heating & Air Conditioning, Inc.,
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