



ACT
Government

What We Heard Report

Skilled to Succeed Implementation

Renewables and Sustainability Industry Round Table

28 November 2022

Consultation purpose

Launched in 2022, *Skilled to Succeed* is the ACT Government's skills and workforce agenda that strives to ensure Canberrans have the right skills for in-demand jobs now and into the future. This agenda focuses on four priorities:

- Delivering skills inclusively to provide all Canberrans a foundation for lifelong learning
- Build a more responsive, flexible, and future-focussed skills system
- Assisting employers to build, attract and retain the right workforce
- Strengthening skills sector foundations

To deliver this agenda, the ACT Government is developing Industry Plans for the Care, Technology, Construction, Experience, and Renewables and Sustainability sectors. These Plans will identify actions for government and industry to ensure that the training and skills system supports Canberra's future workforce.

To underpin the development of these plans, the ACT Government has been hosting roundtables with industry stakeholders to hear their views on how the skills sector can support the growth of their industry and develop the workforce that they need going into the future.

On 28 November 2022, the Chief Minister, Treasury and Economic Development Directorate hosted an ACT Renewables and Sustainability Roundtable with businesses, the ACT's energy distributor, peak bodies, industry associations, apprentice trainers, employers of apprentices and research and academia groups.

Yellow Edge, a Canberra-based leadership and performance development company was engaged by the ACT Government to facilitate the Roundtable and prepare the following Listening Report. A list of organisations that attended the Roundtable is provided at [Attachment C](#).

What we heard

Participants from across the Renewables and Sustainability industry, including businesses and employers of apprentices, peak bodies, industry associations and the ACT's energy distributor had a robust discussion on the issues facing the sector and ideas on addressing the issues. The views recorded in this report were captured from participants on the day.

Three key themes emerged over the course of the discussion. They were:

1. Vocational education reform
2. Industry trends
3. Attracting and retaining apprentices

These themes are interconnected and together provide a picture of what the industry is currently experiencing as well as opportunities for improvement in the future.

What are the opportunities and challenges for the renewables and sustainability workforce now and into the future?

Theme 1: Vocational education reform

- **Individual pathways.** Participants recommended greater flexibility and versatility in how courses are delivered. There is an opportunity for industry to look at combining and leveraging content from different trades and qualifications to cater to individual, business, and industry needs. Specific examples include:
 - Plumbers taking electrical courses to be able to install / service heat pumps.
 - Electricians taking extra units and courses to work on EVs.
 - Electricians enrol in ITC units /courses to work as network electricians including in relation to Vehicle 2 Grid (2-way) power sources.
 - Gas fitting courses for women i.e., Ginninderry and Lendlease case studies.
- **Micro-credentialling.** Participants discussed establishing a system of micro-credentialling to support particular cross-trade skill development. Micro-credentialling (i.e., the certification of short course learning that can be built up over time to encourage lifelong learning) is of growing interest and will become an increasingly important part of post-trade training.
- **ICT and WHS skills.** The workforce needs to develop critical ICT skills and knowledge including supervisory control and data acquisition (SCADA), and communication skills. There is also an increasing requirement for WHS training.
- **Hybrid learning.** Students would like more blended learning options i.e., a combination of face-to-face, online, and on-the-job learning (i.e., micro-credentialling and assessments). There could be less onus on face-to-face learning particularly because the ACT attracts apprentices and employees from across the capital region, south-west NSW, and northern Victoria.
- **Peer-led learning.** The traditional teacher–student relationship is no longer the mainstay. The industry can recognise and leverage the knowledge and experiences of current workforce, including employees who have come from non-conventional workforces or outside the industry. This includes drawing on subject matter and industry experts to augment current training.
- **National uniformity.** Participants recommended national uniformity be prioritised, including in the areas of state-based licensing, nationally consistent accreditation, regulation, and training standards.
 - In NSW, automotive technicians are individually registered whereas in the ACT it is the business/employer who is registered.
 - In the ACT, plumbers and gasfitters have a restricted license to perform disconnection and re-connection. It is not the same in NSW.
 - The ACT to maintain its high standards.

- **Funding models.** Participants discussed funding for apprentice training. One participant noted the variation in government funding for courses across jurisdictions and that the number of training places could be agreed upon with industry. Participants discussed industry needs for “adequate funding for upskilling as well.” Participants discussed:
 - Establishing and funding industry specialist Registered Training Organisations (RTOs).
 - RTOs receiving progression payments instead of a one-off payment when a student completes a unit.
 - Funding models for RTOs that enable them to deliver recognition of prior learning (RPL) for students with on-the-job experience.
 - Australian Skills Quality Authority (ASQA) potentially regulating the RPL system to ensure consistency.

Theme 2: Industry trends

- **Home automation.** There is a growing trend towards home automation including Wi-Fi and Bluetooth-enabled devices. These devices and systems are easy to break into and access. The industry needs to build a skilled workforce to help install and maintain these systems.
- **Transition to Hydrogen.** The scale of uptake of green hydrogen is unknown. Conversion to green hydrogen will require the plumbing workforce to develop new skills.
- **Recycling industry.** There is a growing number of businesses involved in re-using / re-cycling materials, components, and products.
 - The second-hand EV market will require workers to be familiar with a range of models and makes not just cars from one manufacturer.
 - PU (Polyurethane) recycling is subjected to mechanical recycling, which involves reducing it to pellets or powder. Workers will need training and skill development.
- **Network electricians.** At a system and energy distribution level, there is need to develop network electricians who have skills and experience in relation to energised lines, high fault levels, and ARC flashes.
- **G2V - V2G – V2H.** Increasingly, the industry is observing people’s cars can become mobile batteries able to power houses or feedback power to the grid at peak times.
- **License restrictions.** Participants discussed the benefits of maintaining license restrictions for plumbing and electrical trades, i.e., no skilled cowboys. This is important for consumer safety.

Theme 3: Attracting and retaining apprentices

- **Marketing the industry.** The ACT is seen as a model jurisdiction. There is a clear vision around electrification and low emissions. Industry could translate this commitment into a call to action for the future workforce. This industry has the potential to be like the Snowy Hydro Scheme – a nation-building project. Participants noted industry’s role in elevating the status of the industry, increase its appeal, and promote its value and importance to society. Participants noted the need to be realistic about the

wide variety of roles and opportunities which exist too. One example is to promote the role the industry is playing in bringing down the cost of electricity.

- **Affordable housing.** Apprentices along with a sizable section of the workforce are experiencing challenges with securing affordable housing and the high cost of living etc. Opportunities to draw people here to the ACT and retention once they are trained was discussed. The industry could consider creative solutions including, for example, on-campus accommodation for apprentices.
- **School-age pathways.** Participants recommended developing vocational pathways and career advice early from school age. There were concerns some school-based career advisors may be less knowledgeable and enthusiastic in relation to career opportunities in trades.
- **Wrap-around support.** The industry could consider the support services which wrap around the apprentice (including mentoring and coaching support) to help support apprentices in not only their training and work, but also their personal lives including their relationships, finances etc. When things get hard, it can be easy for them to drop out of the program. Participants recommended a network that can guide and support them.
- **Continuous learning and cross-training.** Participants noted the benefits of an ongoing commitment to learning and development post-apprenticeship. What are the ‘post-trade courses’ that they're going to need? Participants discussed the versatility of competencies and skills across the industry and recommended a consistent and inter-operable training system that allows individuals to undertake cross-skilling including units from other trades.
- **Definition of Completion.** Some apprentices are leaving their apprenticeship (particularly in their third year) because an employer will offer them \$0.30 more an hour to move to private direct employment. Participants discussed whether it counts as completion because with all the mentoring and support they receive over the three years they are then able to complete the last part of their apprenticeship.
- **Diversity.** Participants recommended innovative programs to help increase workforce diversity. In the ACT, women make up 15 per cent of the total number of apprentices working in the electrical industry. This is compared to 2 – 3 per cent of women working in the electrical industry Australia-wide. It was recommended these local initiatives be rolled out more broadly.

What would success look like for the different industry stakeholders over the next 5 -10 years?

Government	Industry
<ul style="list-style-type: none"> • Clear vision on electrification including timelines, support / assistance. • Planned policies/approach/transition. • ACT system integrated with other states and territories (especially around regulation, licencing, training standards). • Industry standards are clear. 	<ul style="list-style-type: none"> • The industry has sufficient skilled labour at right time i.e., can scale up. • Workforce diversity closer to 50-50 – male – female. • The renewables and sustainability workforce view the ACT as an attractive place to live and work.

<ul style="list-style-type: none"> • Next 10-year plan is in development /underway. • Stronger incentives for businesses to take on apprentices. 	<ul style="list-style-type: none"> • Learners feel supported and have clear pathways into and through the industry. • Greater industry appeal including promoting the social benefit of the work.
<p>RTO (Training Organisations)</p> <ul style="list-style-type: none"> • Versatility in delivery modes to cater to a wide diversity of learners. • Post trade training / upskilling courses are readily available. • Stronger collaboration with industry. • Recognition of existing skills is a standardised feature of training. There are structured tools and guidelines for RPL. • Training is mixed modal and blends different learning methodologies and delivery approaches. • School career advisers are engaging students in conversations early in relation to careers in the renewable and sustainability industry. 	<p>Learners</p> <ul style="list-style-type: none"> • Individuals new to the industry are aware of renewable career pathways. • Individuals feel supported / engaged through training programs. • Individuals have ready access to re-skilling / upskilled as tech needs change. • Individuals have awareness of opportunities and pathways at school level.

Mentimeter crowd-sourcing tool

Of the issues and actions explored in today’s roundtable, what are one or two actions that could be “quick wins”? What do you believe would have the most impact on the delivery of ACT’s skills and workforce agenda?

One participant commented: *“I don’t think there are any quick wins this needs to well plan transition, as we the move to electrification won’t happen overnight [sic].”*

Next steps

The insights from this roundtable will inform the development of a Renewables and Sustainability industry action plan. The ACT Government will stay connected with stakeholders as it progresses the development of the action plan. The plan is expected to be released in 2023.

In the meantime, if you or others from your organisation would like to provide additional submissions, please write to skills@act.gov.au by **Tuesday 28 February 2023**. All input is greatly valued, and we thank you for your participation in this forum.

Attachments

Attachment A. Key slides from discussion paper tabled in the session

Industry Overview

15,792 Total number employed in the Renewables Industry in 2021

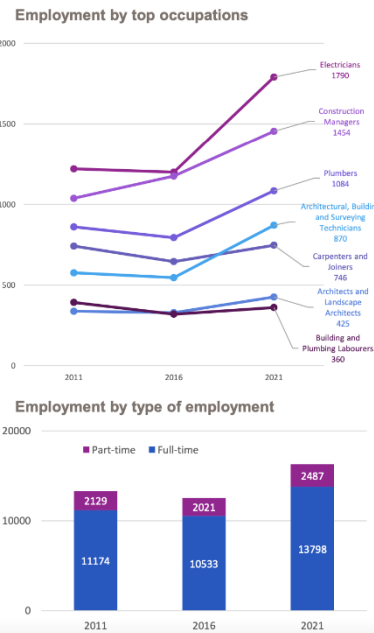
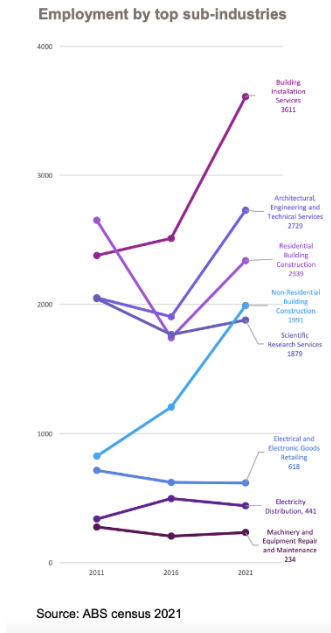
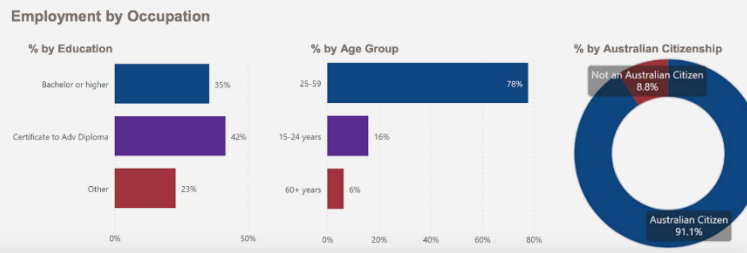
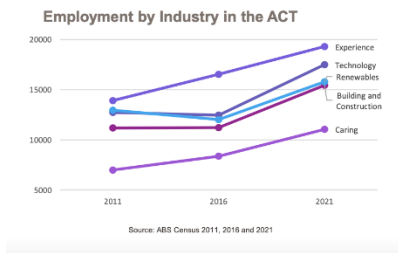
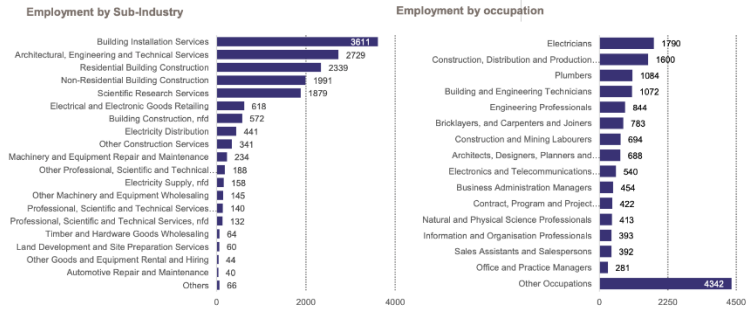
Growth in Employment
 22% Last 10yrs | 31% Last 5yrs | 22% Avg 5yrs (All industries)

Largest Growing Occupations

- Architecture, Building and Surveying Technicians
- Electricians
- Airconditioning and refrigeration mechanics

Source: ABS census 2021

Building and Construction - Employment Snapshot (2021 census)



Industry snapshot

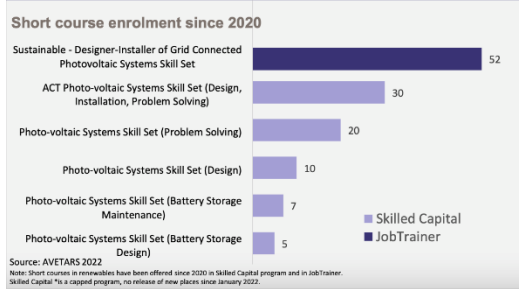
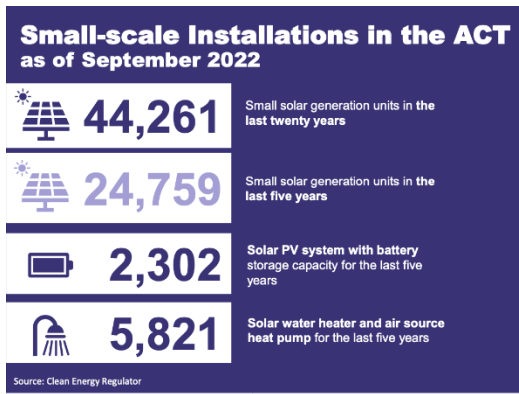
4,507 Total number of businesses in the Renewables industry in 2021, 1,852 of which are employing businesses

Contribution to ACT economy
6.3% of total employment

Number of business by sub-industry

House Construction	521	385
Other Residential Building Construction	495	104
Engineering Design and Engineering Consulting	271	217
Electrical Services	228	289
Plumbing Services	114	183
Non-Residential Building Construction	155	150
Other Construction Services nec	151	108
Architectural Services	97	96
Land Development and Subdivision	100	0
Air Conditioning and Heating Services	21	0
Scientific Research Services	23	0
Other Goods and Equipment Rental and Hiring nec	26	0
Other Building Installation Services	35	0
Surveying and Mapping Services	3	0
Scientific Testing and Analysis Services	1	0
Other Professional, Scientific and Technical Services...	1	0
Electrical, Electronic and Gas Appliance Retailing	0	0
Other Machinery and Equipment Repair and...	0	0
Other Electrical and Electronic Goods Wholesaling	0	0
Domestic Appliance Repair and Maintenance	0	0
Other Electricity Generation	0	0
Automotive Electrical Services	0	0
Plumbing Goods Wholesaling	0	0
Electricity Distribution	0	0
Electricity Transmission	0	0
On Selling Electricity and Electricity Market...	0	0

Source: ABS 2021



- ### Renewables and Sustainability related courses currently available
- Working Safely in the Solar Industry
 - Design and Installation of Grid Connected Renewable Energy Systems
 - Certificate III in Electrotechnology Electrician
 - Certificate III in Renewable Energy ELV*
 - Certificate IV in Renewable Energy*
 - Certificate IV in Electrical-Renewable Energy*
 - Certificate IV in Electrical-Photovoltaic Systems*
 - Certificate IV in Wind Power Generation*
 - Graduate Certificate in Renewable Energy Technology*
 - Advanced Diploma of Applied Electrical Engineering (Renewable Energy)*
 - Advanced Diploma of Renewable Energy Engineering*
 - Diploma of Renewable Energy Engineering*
 - Diploma of Environmental Monitoring and Technology
 - Certificate IV in Environmental Monitoring and Technology
- Source: ACT Skills Needs List
 * These courses were introduced in 2022 and currently there are no enrolments.

Megatrends

Impactful technology



Technological advances are changing the renewable industry. Increasing use of artificial intelligence to improve efficiency and assure quality. Technological advancement and connectivity are empowering individuals across the world as teleworking, telehealth, online shopping and digital currencies has become popular.

Urbanisation and demographic change



The world is experiencing rapid and massive demographic change, such as an ageing workforce, which adds a new challenge for businesses.

Climate and resource security



The megatrend of climate and resource security describe the growing pressure on critical resources especially food and clean water scarcity. This drives the need for climate resilient infrastructure and the growing demand for environmentally sustainable, climate-ready and zero emissions approaches.

Demand for work-life balance



Work-life balance is of increasing importance to the workforce. Trends such as hybrid working has shifted the nature of work in the post-pandemic workplace.

Focus on cleaner and greener solutions



This trend emphasises on solutions to resource constraints through cleaner and greener means driven by population growth, industrialisation and urbanisation. The renewables sector is growing and will contribute to the establishment of new industries and occupations.

Attachment B. Roundtable scenarios

Scenario 1

The year is 2030 and about 15% of all cars are electric, with 90% of new cars electric.

Gerald has been working as a mechanic in a large business for 15 years. His boss has said that he needs to learn how to service electric cars.

How can the vocational sector support skill development for people like Gerald and other workers of the future? What role can recognition of prior learning play in supporting older workers and other workers from diverse backgrounds? What are the pain points right now?

Scenario 2

The year is 2035 and the ACT's vocational sector has transformed to embrace megatrends in technology and flexibility. The sector is meeting the needs of a new diverse range of skills in the circular economy and the electric revolution. Bronwyn is a course convenor, looking to re-join the vocational education sector after a 13-year career break.

What changes will Bronwyn notice in the vocational education sector now that it has adapted to the new future? What will course options look like? What role will the increasing diversity of students have in the changes that Bronwyn notices? What are the pain points right now?

Scenario 3

The electricity network is moving towards a two-way system with an increasing supply of rooftop solar, and domestic to large-scale batteries. Homes have smart meters and are choosing electrical appliances. Demand for electricians is higher than ever before.

Rob is an electrician who employs 10 people, including apprentice electricians, senior electricians, and an office manager in his business. He wants to continue expanding his business to meet the growing demand for electricians in the electric future.

What type of skills does Rob need from the vocational sector to continue expanding his business? With the increased focus on technology and sustainability, what other types of skills will be needed in 2030? What are the pain points right now?

Scenario 4.

The year is 2030 and consumption of natural gas is declining with more and more people choosing electric appliances for space and water heating and cooking. Around 7,000 dwellings each year are being disconnected from gas, about double the current number of new builds. Renewable gases (such as hydrogen and biogas) are used for some industrial processes.

Jacinta is 28 years old and has always enjoyed running her own business and working as a gas fitter. She's considering taking on another apprentice and is deciding if further study could develop her business further.

Are there changes to the gas fitter trade certificate that would enable her to recruit an apprentice that can disconnect the gas and install gas replacement appliances? How can we train the required number of people? What are the barriers to apprentice and trainee completion? How can these barriers be addressed? What are the pain points right now?

Attachment C. Roundtable attendees

Organisation
EvoEnergy
Master Plumbers Association
Motor Trades Association of the ACT
ACT Electrotechnology Energy Advisory Board
Electric Vehicles Canberra
Australian Electric Vehicle Association
IonDNA Electric Vehicles
Sunstak
NECA Electrical Apprenticeships
Electro Group Training
Neoen
ACT Government officials from Economic Development.

Attachment D. Roundtable notes

Gerald is a senior mechanic by now.
 Some - much of his training is still useful.
 Software training - tech support
 (Upskill him so that he can train others)

Building occupational skills
 - not replacing ✓
 - include new mandatory training ie WHS related.
 - digital upskill ✓

- automotive VET units for electric motor / batteries need to be available for upskilling existing mechanics
- there'll be a quickly emerging 2nd hand EV industry; currently EVs are traded in manufacturer-specific skills
- Broadening of knowledge of EV types, Tesla, etc.
- ONLINE COURSES FOR ASSESSMENTS

x ^{no} individual licensing for automotive technician in ACT at the moment (business, is licensed but not person) of NSW which has this (again & interstate uniformity would help)

x expand to fuel-cell EV's (eg hydrogen).

x how to time the training of w_{EV} ^{speed of} EV need e penetration so that it's aligned.

x post trade training - enhancing / updating skills to keep up.

① x technology changes - in course delivery as well as subjects / content ✓ ✓
 PP + Registration / industry compliance??
 x social changes & dynamics between teachers & students ✓ ✓

③ x wider range of diversity / backgrounds in non-conventional courses ✓ ✓
 eg women in trades
 first nations / across courses.

eg. x less face to face learning - so ACT is capturing students from across capital region / SW NSW / northern VIC

② in-house ^{STUDENT LEARNING}
 x industry training much more integrated w/ course content
 hybrid IT COMMUNICATION
 quality ↑ micro-credentials
 x cross over between trades ↑ - flexibility
 regulatory acceptance around modules ✓

x re-use / recycling industries ↑
 so courses incorporate these elements
 eg training for PV recycling skills & downstream businesses re-using materials ✓
 - RPL FOR EXISTING PRACTITIONERS.

V2G - 2 way
 SCADA/Comms ✓
 CYBER SECURITY - interesting!
 NETWORK ELECTRICIAN ✓
 (WORKING UNIVERSITIES, HIGH SCHOOL LEVELS)
 DEC PART.

x grid → vehicle (+ then vehicle → grid)
 V2G + V2H 2 way

x competition inter-state for renewable jobs (eg QLD skills program) + training.

x employment - finding people w/ right skills @ right time

x employees w/ multiple skillsets (change to allow plumbers to take electrical courses)
 + ability to work across trade areas
 ✓ eg sparky - plumber → heat pump.

x recognition of skills + training across states/territory - continuity/uniformity

x eg individual vehicle training recognised in NSW but not ACT ✓

x spirit ideology of ACT govt focus on electrification of 'green' gas hydrogens.

→ digital/IT training

- funding for upskilling with renewable units
- adequate funding for training including apprenticeships (ACT is currently lowest rate in any jurisdiction)
- new technology & skills need specific training funded

→ eg home automation → is coming, but not in need now (high) → scale up.

- additional training due to H₂ volatility v natural gas (disagree - H₂ is a safe gas)

- electrical & plumbing work will remain within license restrictions & require trade qual

① - plumbers/gasfitters can already have a restricted elec license (for disconnect/reconnect) - fault find + repair ✓

- TRANSITION TO HYDROGEN/LEAD - PLUMBERS in ACT (diff. to NSW) would be good to add to NSW

- HYDROGEN STORAGE

- TRADE TRANSITION: 2nd competency - better

x low numbers of women in gas fitters

? focused courses on women in this area eg Ginninderry/lead lease example.

x cross training across trades focused on installations eg heat pumps repairs

cross border continuity/uniformity

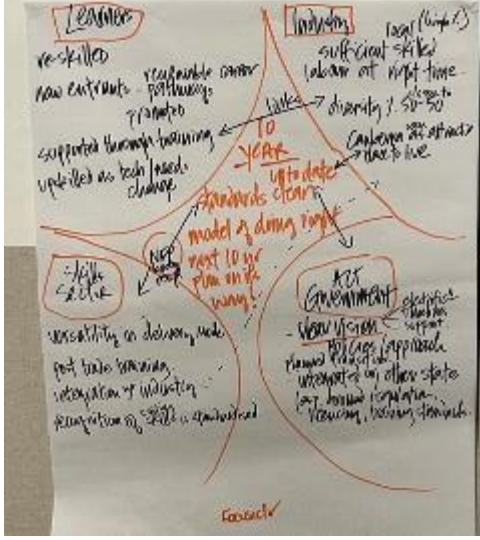
x barriers to completion - wages during apprenticeship period

③ ✓

Y trainee want NÖS in contracts

5 YRS
 - ACT INCENTIVES ON GETTING NEW APPRENTICES.
 - QVT -
 - IND- APPEAL
 - FLASHY &
 - SATISFACTION
 - SERIAL BENEFIT.
 - PROMOTION-REP.
 - SCHOOL LEAVERS
 - FIBBA
 - EARN/LEARN
 - AWARENESS - SEC. SCHOOL SKILLS.
 - CLEAR PATHWAYS
 - RPL - STRUCTURED TOOLS.
 - MIXED MODE.
 - Start up for Careers Advisor / teachers forum again (5-6 yrs ago)

10 YRS
 Skills shortages long been addressed by:
 - additional apprentices → trades
 - adequate funding for apprenticeships
 ACT got to find a way to get other jurisdiction
 - adequate funding for up-skilling
 - innovative programs to ensure workforce diversity + retention:
 - targeted pre-app
 - apprentice mentoring (long-term career smelter)
 - mature-age support (recognition that 21 yrs is really not "mature")
 ACT got adequate training plan established in partnership with industry
 Electrical apprenticeships
 - Incentive over 10% completion (ACT = 30%)
 - Industry specialist ETOs / = 90%
 - ETOs completion
 = Better return on investment for each Govt if can be worked through industry specialist ETOs + ETOs
 - Better funding model for progression payments not payment @ work completion (broader workforce employment)



NATIONAL ACCREDITATION
 REGULATION
 UNIFORM TRAINING
 DE-CENTRALISE
 RPL
 APPRENTICES - ACCOUNT
 - COMPETENCY
 IN 10 YEARS TIME - GREEN ENERGY LEADERS
 IN ACT
 EXPORTING RENEWABLE ENERGY
 (GLASSBORO)
 (MINISTER)
 10 YEARS - CORRECT SKILLS & NUMBERS
 CAREERS DEVELOPMENT - SCHOOLS
 VARIOUS OFFICES
 - REGIONAL
 DIVERSE WORKFORCE

