

BROADBAND DEPLOYMENT ADVISORY COMMITTEE (BDAC)

**Broadband Infrastructure Deployment Job Skills and
Training Opportunities – Working Group**



We want to cover today

- **Opening Remarks by Chair and Co-Chair**
- **Acknowledging Team Members**
- **Working Group Structure and Updates from Group Calls**
 - Kick-off Call (July 15, 2019)
 - Conference Calls, Slides, Meeting Minutes (August 5, 19; September 3, 16)
 - Group Tasks; Sub-groups and Assignments
 - Shared Drive with Knowledge-base
- **Updates from each Subgroups**
 - Identifying Stakeholders
 - Skill Gap for each stakeholder
- **Open floor for comments and discussion**



Opening Remarks

- **Chair: Leticia Latino van Splunteren**

CEO, Neptuno USA Corp

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- **Co-Chair: Rikin Thakker**

VP of Telecommunications and Spectrum Policy, MMTc

rthakker@mmtconline.org



Working Group Members

* Main BDAC Members

1. Leticia Latino* (Chair)
2. Rikin Thakker* (Vice Chair)
3. Nayef Abu-Ageel
4. Miranda Allen
5. Earl Buford
6. Kelleigh Cole*
7. Todd Crump
8. Robert Debroux* (Alt. Tim Ulrich)
9. Douglas Dimitroff*
10. Bill Esbeck
11. Debbie Goldman (Alt. Zane Farr)
12. Kyle Hitchcock
13. Donald Long Knife
14. Eve Lewis*
15. Charles McKee*
16. Marquita Rockamore (Alt. Tondi Allen)
17. Grant Seiffert
18. Steve Sellenriek
19. Dileep Srihari*
20. Brent Skorup*
21. Curt Stamp*
22. Tom Struble*
23. Larry Thompson* (Alt. Julie Darrington)
24. Jenifer Vanek

Working Group Structure and Updates from Group Calls

Kick-off Call (July 15, 2019)

- **Member Introduction**
- **Review of Charges**
- **Identification of Key Words in the Charges**
- **Review of Responses Collected through Introduction Email**
- **Discussion on Work Breakdown**
- **Ideas on creating Sub-groups**
- **Group meets every other Monday, 3:00 to 4:30 PM EST**
- **Shared Drive and Conference Call Platform**

Resource Sharing

- **Shared Drive for Resources and Meeting Material**
- **Folders:**
 - Meeting Minutes
 - Members Info and Announcements
 - Work Group Charges
 - Research Resources
 - TBD

Working Group Charges

- **Develop recommendations to make more widely available and improve job skills training and development opportunities for the broadband infrastructure deployment workforce.**
 1. **Identify any gaps** in broadband infrastructure deployment skills that could inhibit the pace of deployment of **fixed and mobile broadband connectivity** across the nation.
 2. For each issue identified, **formulate possible solutions that stakeholders** could implement. Proposed solutions, to the extent possible, should be **adaptable and scalable** to different deployment areas and technologies to encourage widespread adoption.

Working Group Charges

3. **Recommend possible steps** that stakeholders could take to **attract more skilled professionals** to join the broadband infrastructure deployment workforce.
4. Identify any **existing job skills and training programs** that could serve **as a model** for stakeholders in developing measures to bridge any skills gaps in broadband infrastructure deployment.
5. Recommend possible **performance metrics to gauge the effectiveness** of existing and future job skills and training programs and develop steps that can be taken to continually improve the effectiveness of such programs.

Key Words in the Charges

- **Identify Skills Gap**
- **Fixed and Mobile Broadband Connectivity**
- **Formulate Possible Solutions**
- **Stakeholders**
- **Training Program Model**
- **Development of measures**
- **Performance Metrics to gauge effectiveness**
- **Rural and Urban Areas**

Top-of-Mind Group Assessment: Questions and Responses

- 1) According to your own experience, name the top three reasons why you believe the US is experiencing a gap in broadband deployment related skills?**
- 2) Name three aspects YOU would focus on to close 'the gap'**
- 3) Name a program/initiative that has been put in place at any level (local, state or nationwide)**

1) Reasons behind skills-gap in Broadband Deployment

Lack of public awareness of job opportunity in this field	5
Unattractive Compensation(Salary and benefits) for a Tough Job	4
Lack of Broadband Technical Careers Options (In General)	3
Lack of Support from Employers and Industry to upskill current workers	3
Commercial Challenges for Individuals or SMB's to comply with Broadband Companies Deployment requirements	3
Lack of Technical Career Paths for youth	2
Unusual demand of skill force (Small Cell, 5G)	2
Youth Discouragement (by parents and teachers) to go into "skilled" trades and become "ditch diggers"	2
Insufficient Government Funding	1
Bad Industry Reputation and Public Relations	1
Old vs. New Workforce Disparity (more retiring than joining)	1
Lack of practical day to day Field Experience	1
Lack of universal terminology and defined general standards	1
Lack of practical knowledge in the engineering courses at the college level	1

2) Aspects YOU Would Focus On

Awareness Campaigns (including creating of "Buzzy" tech titles) to create awareness, recruit and educate parents	3
Diversity inclusion to bridge gap (women, war veterans, ex-convicts)	3
State-Certified Apprenticeship Program for High Schoolers	3
Consult with Telecom workers to get their opinion on the issue and/or develop curricula	3
Adapting current training programs to include needed skills	2
Private Sector initiatives that focus on skilling low-income individuals	2
State-Certified Paid for Apprenticeship Program	2
Target segments whose jobs are disappearing or changing by automation and offer training.	2
SMB Commercial Package Bundle to make it accessible	1
Online Training Opportunities to upskill	1
Tech School Training with Associate degree or college credit	1
Develop Curricula that's flexible and "portable" into other trades	1
Increase Immigration options and specialty visas for Broadband foreign workers	1
Training reimbursement to the Employer	1
Industry Sponsored Trainings	1
Develop "standardized training programs" which are accepted by all players of our eco-system.	1
Educate stakeholders on the value of including labor representatives on job training collaboratives and initiatives	1
Union run and labor management collaborations to build apprenticeship programs	1
Closing the gap through credentialing	1
Replicate current successful programs in other areas	1

3) Example of Existing Programs

- TIRAP – Telecommunications Industry Registered Apprenticeship Program
- TEC – Telecommunication Education Center - by WIA
- "The Community Technical College system in Wisconsin
<https://www.witc.edu/continuing-education-and-training/professional-development/broadband-academy>.
- SEATAC Airport has Airport University, a workforce development program that supports employer - Community Tech Ed College partnerships
<https://www.portseattle.org/community/workforce-development>"
- Aiken College
- Independent Electrical Contractors
<https://www.iecchesapeake.com/library/public/images/Online-Apprenticeship-Images-F/IEC-Ace-Credit-Information.pdf>

3) Example of Existing Programs

- The Last Mile (TLM), a non-profit, has offered coding and web-development courses to inmates at San Quentin State Prison in California since 2014, providing inmates with technical training, income, and connections to outside employers that have shown to substantially reduce recidivism. Today, TLM offers software engineering training in 11 facilities in 4 states. This program, and others like it, could easily be used to support the telecom workforce going forward.
- PCCA is currently working with three schools with a Utility Service Technician Programs in Missouri, Wisconsin and Ohio. State Tech in Missouri is along the farthest with 23 students through the first year and 23 enrolled next year. The school is currently working on a building project that will be a first in the nation that we know about .
- Professional Bachelors and Masters Program in Telecom (e.g. Uni. of MD)
- Alliance at AT&T. The Alliance is a joint labor-management program that has trained tens of thousands of union members at AT&T, Avaya, and Nokia to adapt to new technologies and upgrade their skills.

General Workforce Challenges

- **Jobs for which it is difficult to find workers with the right skills**
- **Positions with high turnover**
- **Occupations where a highly skilled workforce is retiring soon**
- **Challenges helping workers keep pace with continuing industry advances**
- **Positions requiring skills that can be learned on the job**
- **Difficulty in attracting new and more diverse talent pools**
- **Lack of Standardized Training**
- **Lack of Professional Programs at the university level**

Dividing the work within the Working Group

- **How are we dividing the work? Do we need sub-groups?**
- **Create sub-groups based on Charges or Stakeholders**
- **Dividing Sub-groups based on Charges**
 1. Identify Stakeholders and Skills Gap (Charge 1)
 2. Formulate Solutions and Recommendations (Charges 2 & 3)
 3. Training Programs and Performance Evaluation Criteria (Charges 4 & 5)
- **Dividing Sub-groups based on Stakeholders**
 - Group agreed to work to “re-frame” the approach on tackling charges by identifying the issues and challenges for the Stakeholders and then formulate solutions and recommendations based on each Stakeholder.

Stakeholders Suggested by the Group Members

- Carriers and their employees
- Contractors and sub-contractors for the Carriers
- Equipment Vendors, Hardware Manufacturers (Vendors)
- Local Government Employees (Municipalities and State Level)
- Industry Associations and their members
- Training Providers and Educators
- Future Workers and Students
- Site Acquisition Specialists

Sub-Groups Proposed Categories Discussion

- 1. Employers** (e.g. Wireless, Cable, WISP, Private, not-for- profits, governmental, sponsors of Apprenticeship Programs, trade associations)
- 2. Workers and Students** (e.g. trainee, apprentices, High- school students, College students)
- 3. Public and Private Providers of Training and Education** (e.g. Higher Education Institutions, 2 Year Technical Community Colleges, Other Training Providers)

Sub-Groups Members Assignment and Dynamics

- **Finalizing Sub-Group Assignment**
- **Identifying a lead for each sub-group**
- **Sub-groups to arrange their own calls (weekly/bi-weekly)**
- **Review the charges and determine the approach**
- **Report progress to the main group during our bi-weekly calls**

Sub-Group Members

1. Employers (e.g. Wireless, Cable, WISP, Private, not-for-profits, governmental, sponsors of Apprenticeship Programs, trade associations)

Robert Debroux (robert.debroux@tdstelecom.com)
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Kyle Hitchcock (kyle.hitchcock2@davey.com)
Eve Lewis (elewis@coconutcreek.net)

Volunteer Leader:

Bill Esbeck

Back-up: Eve Lewis/Leticia Latino

2. Workers and Students (e.g. trainee, apprentices, High-school students, College students)

Rikin Thakker (thakker.rikin@gmail.com)
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Kelleigh Cole (kcole@uen.org)
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Volunteer Leader:

Miranda Allen

3. Public and Private Providers of Training and Education (e.g. Higher Education Institutions, 2 Year Technical Community Colleges, Other Training Providers)

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Volunteer Leader:

Nayef Abu-Ageel

Sub-Group Members and Action Plan

- 1. Have at least TWO sub-group meetings before our next in-person meeting on September 19th**
- 2. Identify Specific Stakeholders within each subgroup**
- 3. Identify Skill Gap and Challenges within Subgroup's Stakeholders. (Initially identified challenges can be used as the starting point for this task).**

Subgroup 1

Identified Stake Holders and Skills Gap Challenges

1. Broadband Carriers and their employees

- a) Unusual demand of skill-force which translates in a shortage of technicians/contractors/subcontractors with the expertise/skills to carry out the work at different levels (site acquisition, tower climbing, equipment commissioning, ect).
- b) Old vs. New Workforce Disparity (more retiring than joining)
- c) Aggressive deployment goals
- d) Construction crews are not typically in-house employee of providers, yet there is huge reliance on contractors in 20+ states.
- e) Lack of Awareness and Training programs tailored for broadband providers and their current employees.

Subgroup 1

Identified Stake Holders and Skills Gap Challenges

2. Construction Contractors and sub-contractors for the Carriers & Tower Providers
 - a) Current Unusual demand for trained skill force.
 - b) Hardship in Recruiting new workers, young people are reluctant to explore the “trades” and technical schools.
 - c) Lack of awareness of training and job opportunities is a common problem; attracting the right type of person who is willing to take on the challenges.
 - d) Telecom workforce is used for both maintenance and growth. There is a workforce issue with addressing maintenance and growth from a training perspective. Gap in knowledge (and available employees) between maintenance and growth.
 - e) Technicians shortage often leads to wages bids and high rotation between companies.
 - f) High cost for in-house training of new personal and lack of government funding/subsidies for training.

Subgroup 1

Identified Stake Holders and Skills Gap Challenges

2. Construction Contractors and sub-contractors for the Carriers & Tower Providers (CONTINUED)
 - g. Expansion of existing skill-sets of current workforce:
 - i. Small cell deployment is different from other macro sites – advances in tech and increasingly specialized tech (Unusual demand of skill-force for Small Cell, 5G).
 - ii. Looking at others coming out of other training (CDL) to have an easy way to obtain more utility training, etc.
 - d) Lack of awareness of training and job opportunities is a common problem; attracting the right type of person who is willing to take on the challenges.
 - e) Commercial Challenges for Small and Medium Contractors/subcontractors to comply with Broadband Companies Deployment requirements (i.e. insurance Policies, certification requirements, etc.) – indemnification impact on the small and medium business. (insurance coverage required sometimes as high as \$25M per incident)
 - f) School to field is a problem – once new technicians get out in the field with the elements (i.e. hot/rain/cold) is a deterrent.

Subgroup 1

Identified Stake Holders and Skill Gap Challenges

- 3. Equipment Vendors, Hardware Manufacturers & Installers**
 - a)** Increased pressure from Carriers to become turn-key solution providers, including deployment services and deployment crews.
 - b)** Current Unusual demand for trained skill force.
 - c)** Hardship in Recruiting new workers, young people are reluctant to explore the “trades” and technical schools.
 - d)** Having to devote sizable economic and human resources to train more workers and meet demand (i.e Ericsson’s multimillion-dollar investment in Training Facilities in Texas and New Jersey)
 - e)** Insufficient Government sponsored programs to help private industry meet training demand

Subgroup 1

Identified Stake Holders and Skill Gap Challenges

4. **Local Government (Municipalities and State Level) and its employees:**
 - a) **Education – for both in-house and outside contractors, also a ‘backwards’ education regarding process to facilitate the public partner needs.**
 - b) **Coordinating multiple utilities in the field; without physical conflicts that result in the interruption of other utility services.**

5. **Industry Associations and their members**
 - a) **Lack of Specific Training programs tailored for broadband providers and their current and future employees.**
 - b) **Few developed curriculums to create careers paths and improve retention. Few apprenticeship opportunities across the industry.**
 - c) **Need for more Government Grants and Funds to support Training and apprenticeships Programs**

Subgroup 2

Identified Stake Holders and Skill Gap Challenges

- 1. Workers: Veterans, transitional adults changing careers, Minority/Women underrepresented communities, immigrants, apprentices, unions**
 - a) Lack of awareness of opportunities, career paths and specific occupational options.
 - b) Proper Driver License
 - c) Process of visa approvals
 - d) Compensation isn't competitive to other industries. Such as Utility, IT, or Wind
 - e) Travel requirements, instability, and seasonal work patterns deter and burn out workers.
 - f) Lack of understanding of career path for technician level jobs; many field jobs are considered seasonal
 - g) Perception that telecom industry does NOT support attractive jobs. People are NOT aware of high paying high-skilled jobs such as RF design engineer, equipment engineer, fiber optic tech, etc.
 - h) Employers willingness to invest in employees' skills gap by investing in continuing training.
- 2. Students: High School, 2 year/tech students, and 4-year students**
 - a) High Schools are graded on the percentage of students that attend a 4-year institution. So a 2 year or tech school doesn't provide points for the school depending upon the state.
 - b) Colleges (Two and four year) don't have professional degree programs. There is not standardized training and existing engineering program as still a decade old and focus on theories not hands-on.
 - c) Youth are discouraged by parents and guidance counselors if they aren't going into a 4-year program.
 - d) Lack of financial aid for industry specific training

Subgroup 2

Other Relevant/Interesting Discussion Points on the call

1. **Compensation:** The perception that the compensation isn't competitive. *The group wanted to know what this was based upon. The sub-group suggested that they would start with some baseline occupations. It was suggested selecting occupations from each side of the spectrum – e.g. For Cellular Communications – select Field Technicians and RF Engineers and evaluate their compensation. Field Tech. occupation might show “low compensation” to stay motivated while RF Engineer occupation might show “adequate or higher” satisfaction. Similar analysis needs to be done for various segments of Telecom.*
2. **Workers' Visa :** There was discussion as to the politically volatile nature of immigration and how this topic would be handled. Non-immigration based work-visas could help. The topic is political, and the entire group needs to decide how to provide recommendations related to immigration affecting the telecom sector. H1B and H2B programs provide good candidates but the approval process is becoming lengthy and it is discouraging more foreign workers to join the U.S. job market in general.

TOP BROADBAND JOB TITLES

Tower/Field Technician	4
Fiber Optic Tech	3
RF Engineer	3
Site Acquisition	3
Project Manager	3
Construction Manager	3
Splicers/Fiber Optic Cable Installer	2
Skilled electronics technicians	
Field engineers	
Telecom engineers	
Laborers	
Equipment operator	
Aerial lineman	
Aerial journeyman	
Network engineers	
Project managers to implement network construction	
Tower Forman	
Central Office Technician	
Data Analysis	
Broadband Technician (Cable Industry)	
In-building Wireless Designer (DAS and Small Cells)	
Small Cell/DASA Tech	
Fiber Construction Manager	
Wi-Fi Designer/Planner	

Subgroup 3

Identified Stake Holders and Skill Gap Challenges

1. **Adult Basic Ed providers/Career and Technical Education programs**

- a) Lack of Awareness: disconnect among training providers, employers, and students/potential workers**
- b) Employers and post-secondary institutions do not know about Career and Technical Education (CTE) provided in Adult Basic Education (ABE) programs offering learning opportunities for reskilling adults**
- c) ABE programs and Community Tech Colleges don't partner to create articulated education and training opportunities**
- d) Traditional Developmental Education policy programming is a disincentive to lower-skilled potential employees (Pell Grants for non-credit programs). Model does not provide just in time skill building within a CTE context as low-skilled adult learners work toward secondary credentials and beyond. Lawmakers are considering the expansion of Pell Grants to short-term job training: JOBS Act.**
- e) Insufficient funding to develop new career pathway programs**
- f) Lack of standardization in the industry**

Example provider:

- Community Colleges, Adult Basic Education schools, Community Based Organizations
- Non-profits, Workforce Development government agencies and CBOs

Subgroup 3

Identified Stake Holders and Skill Gap Challenges

2. Post secondary

- a) Not aware of employer needs**
- b) Difficulty in recruiting students to those programs**
- c) Lack of professional degree programs in this field**
- d) Lack of career paths – especially, for technician level (certificates and two-year degree)**
- e) Lack of standardization makes it difficult to develop an effective curriculum**
- f) Insufficient funding to launch new programs that are perceived as risky**
- g) Need for industry-college partnerships**
- h) Engineering Technology programs that prepare students for hands-on jobs are not popular and face pay and licensing issues.**

Example provider:

- State University of NY
- Wisconsin Indianhead Technical College (does exemplary work that could serve as a model to replicate)

Subgroup 3

Identified Stake Holders and Skill Gap Challenges

3. Employer providers

- a) Investment – e.g. Ericsson’s heavy investment in establishing facilities to train more technicians, tower climbers and specialists in the skills necessary to deploy 5G technologies in the U.S.**
- b) Lack of standardization**
- c) Limited option for continued education (e.g. have budget for Masters Degree education such as MBA but not for professional training)**
- d) Internal training not recognized by the entire industry**
- e) Vendor specific training – teaching on their own equipment**

Example provider:

- Ericsson, CommScope, SOLiD, Corning, iBwave

Subgroup 3

Identified Stake Holders and Skill Gap Challenges

4. State gov't entities

- a) Need more support for youth and adults programs such as CTE and apprenticeships. Perkin V, signed into law on July 31, 2018, provides \$1.3 billion annually for CTE programs. Its purpose is to ensure workforce skills taught in CTE programs align with labor market needs.**
- b) Need to support businesses to hire workers with barriers to employment such as veterans, disadvantaged youth, and low-income workers.**
- c) Lack of standardization**

To be determined...

- **Structure of the report? May be too early?**
- **Setting up the deadlines (From Main BDAC and Internal within the sub-groups)**
- **Transferring the “knowledge” from conference calls to “meaningful content” for the report**
- **External SMEs who can join the calls and share their experience and wisdom**

Meanwhile...raising awareness is something...



FCC Chairman Ajit Pai with Tower Crew



FCC Commissioner Brendan Carr

...we all can contribute to do.

MMTC @mmtconline · Jun 1, 2018

Here's a #FridayFlashback to @WIAorg's #ConnectX18 last week that highlights the #apprenticeship, #workforce development & #5G sessions with speakers from MMTC, @NatUrbanLeague & WIA; and talks given by @FCC's @AjitPaiFCC & @mikeofcc. wke.it/w/s/UrlZ3 #ApprenticeshipWorks



Evan Swarztrauber @EvanS_FCC · Oct 18, 2018

Great discussion @CTA on #5G and workforce development w/ @BrendanCarrFCC and @JenniferTaylorM



Ericsson N. America @EricssonNA · Jun 30

Girl power! 🙌 We loved hosting @gsnetx at our @ericsson Center of Excellence in Lewisville, TX. Let's work together to build a diverse #STEM leadership pipeline for the future! m.eric.sn/G4Af50uJDZ



40% of American employers report they can't find employees with the training they need to fill the 5G skills gap.

Source: CompTIA Report, "Assessing the 5G Skills Gap"

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