Powering Inclusion: Language Equity as a Gateway to Clean Energy Workforce Development

A Policy and Practice Paper Submitted to the NGIN Cityscapes Summit

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About the Author

Dr. Pamela L. Golatt is an Administrator with Columbus City Schools with expertise in English Learner (EL) education policy and urban school reform. She holds an EdD in Educational Administration from The Ohio State University, where her doctoral research examined the challenges and opportunities of ESL/ELL education in the Forrest City School District — a pseudonym for a fictional Columbus, Ohio urban school district used in Dr. Golatt's dissertation research. Her work sits at the intersection of language acquisition, equity, and community workforce development.

Abstract

The clean energy sector — particularly solar photovoltaic (PV) installation and wind turbine technician roles — represents one of the fastest-growing segments of the U.S. economy. Wind turbine service technicians are projected to grow 50% by 2034, and solar PV installers by 42%, making these among the top two fastest-growing occupations nationally (U.S. Department of Labor, 2024). A significant and rising share of the workers filling these roles are Hispanic/Latino immigrants or individuals with Limited English Proficiency (LEP): 24% of solar workers identify as Hispanic or Latino (IREC, 2024). Yet the linguistic infrastructure of the energy workforce training sector has not kept pace with its demographic reality. Drawing on original doctoral dissertation research examining ESL/EL education in urban school districts (Golatt, 2020), this paper argues that the same language acquisition barriers facing K–12 English Learners (ELs) persist — largely unaddressed — into the adult workforce. This paper proposes applying evidence-based ESL instructional frameworks — particularly sheltered instruction, primary language support, and family-school/community-employer partnerships — to energy sector workforce training, apprenticeships, and clean energy business development, offering actionable policy recommendations for cities, employers, and federal agencies.

Executive Summary

This policy and practice paper advances a central argument: language proficiency is not merely an educational concern — it is an economic development and workforce equity imperative. Key findings and recommendations include:

- Clean energy is a demographic reality: 24% of U.S. solar workers are Hispanic or Latino (IREC, 2024), up from 17.2% in 2019. Many are immigrants or LEP

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individuals. Wind and solar are the #1 and #2 fastest-growing occupations in the nation (BLS, 2024).
- Language barriers are safety and economic barriers: LEP workers face documented barriers in comprehending onboarding, safety protocols, and certification processes (Hammertech Systems, 2024).
- Evidence-based ESL frameworks apply to the energy sector: Sheltered instruction, primary language support, and community-employer partnerships — proven in K–12 EL settings — can and should be adapted for clean energy workforce training.
- Latino-owned businesses are leading in green adoption but face structural funding and language barriers; 88% have adopted at least one green/sustainability initiative (Stanford Latino Entrepreneurship Initiative, 2024).
- Five policy recommendations are advanced: multilingual training standards, a Sheltered Energy Instruction Protocol (SEIP), expanded multilingual safety infrastructure, LEP-inclusive business development, and K-to-career EL pipelines.

Section 1. Introduction: The Intersection of Language, Labor, and the Clean Energy Economy

The United States is in the midst of an energy transition of historic proportions. Driven by the Inflation Reduction Act of 2022 (IRA) — the single largest climate investment in U.S. history — the clean energy sector is experiencing unprecedented growth in deployment, employment, and economic activity. Solar photovoltaic installation and wind energy are at the forefront of this transformation, not only as technology sectors but as labor markets that are reshaping the American workforce.

The numbers are striking. According to the U.S. Bureau of Labor Statistics, wind turbine service technicians are projected to grow by 50% between 2024 and 2034, making this the single fastest-growing occupation in the entire U.S. economy. Solar photovoltaic installers rank second, with a projected growth rate of 42% over the same period (U.S. Department of Labor, 2024). The solar and storage industries together employed 464,053 U.S. workers in 2024, with solar alone accounting for 280,119 jobs — more than three times the employment of the entire U.S. coal industry (IREC, 2024).

Yet behind these headline figures lies a demographic reality that has received insufficient attention from policymakers, workforce development agencies, and clean energy employers alike. The Interstate Renewable Energy Council's (IREC) 2024 National Solar Jobs Census reports that 24% of solar workers identify as Hispanic or Latino — up from 17.2% in 2019, a seven-percentage-point increase in just five years, exceeding the national Hispanic workforce average of approximately 19%. Many of these workers are immigrants. Many are individuals with Limited English Proficiency (LEP). They are, in short, building America's clean energy infrastructure — often in environments that have not been designed for their linguistic success.

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This paper draws a direct line between two arenas that have rarely been connected in policy discourse: the education of English Learners (ELs) in urban K–12 school districts, and the workforce training of LEP adults in the clean energy sector. The connection is not merely analogical — it is developmental. Research conducted in Franklin County, Ohio (the Columbus metropolitan area) found that 23.6% of foreign-born persons are under the age of 18 (U.S. Census Bureau, 2016). The EL students in Columbus City Schools today are the energy workforce of tomorrow. The language barriers they face in the classroom — if unaddressed — will follow them into the job site, the apprenticeship program, and the small business loan office.

"Language proficiency is not merely an educational concern — it is an economic development and workforce equity imperative."
— Dr. Pamela L. Golatt, EdD

Dr. Golatt's doctoral dissertation, completed at The Ohio State University, examined the problems and opportunities of ESL education in an urban school district serving a large immigrant and EL population. The lessons from that research — about what works, what fails, and what is at stake when language is ignored — provide the evidentiary foundation for this paper's policy proposals. Applied with intention to the clean energy sector, these lessons offer a roadmap for building a workforce infrastructure that is not only green, but genuinely inclusive.

Key Data Point
Wind turbine service technicians and solar PV installers are the #1 and #2 fastest-growing occupations in the United States, projected to grow 50% and 42% respectively by 2034. The median annual wage for wind turbine technicians is $62,580; for solar PV installers, $51,860 (U.S. Department of Labor, 2024).

Section 2. The LEP Worker in the Energy Sector: Prevalence and Profile

To understand the challenge and the opportunity at the heart of this paper, it is necessary first to define the population in question. Consistent with the framing established in Dr. Golatt's dissertation research, the term LEP worker encompasses individuals whose primary home language is not English, including those described as non-English speaking (NES), limited English proficient (LEP), and non-native English speakers — terms used across the literature to identify persons for whom English is acquired rather than native (Echeverria et al., 2004; Harris & Hodges, 1995; McLaughlin & Vogt, 1996). This population is not marginal to the U.S. workforce; it is central to it — and nowhere more so than in the clean energy sector.

2a. Solar and Wind: A Hispanic and Immigrant Workforce

The IREC National Solar Jobs Census 2024 documents that Hispanic and Latino workers now constitute 24% of the U.S. solar workforce, up from 17.2% in 2019. This

concentration is especially notable in the installation and project development segment — the hands-on, site-based work that accounts for approximately two-thirds of all solar jobs. These are the roles most directly affected by onboarding language, safety communication, and certification requirements — and the roles most likely to be held by workers who are immigrants or LEP individuals.

In the distributed wind energy sector, a parallel pattern emerges. Research on distributed wind deployments finds strong correlations with linguistically isolated communities — specifically, census tracts where "limited English speaking" household populations are at or above the 90th national percentile. In other words, the communities where clean energy is being deployed are, in many cases, the same communities where English language access is most limited.

2b. Language as a Safety Barrier

Research from Hammertech Systems (2024) documents a troubling reality in the construction and installation workforce: language barriers materially inhibit LEP workers' comprehension of onboarding documentation, safety protocols, and ongoing site processes. This is not a peripheral concern. In industries like solar installation and wind turbine servicing — where workers routinely perform tasks at height, with electrical systems, and in confined spaces — miscommunication of safety information is a life-safety issue. Contractors are actively seeking multilingual safety support solutions, not merely as a diversity initiative, but as an operational necessity.

Safety Alert

Language barriers in clean energy installation sites are not a minor inconvenience — they represent a direct threat to worker safety. Solar installation and wind turbine servicing involve high-voltage electrical systems, fall hazards, and confined space entry. When safety protocols are communicated only in English to a predominantly LEP workforce, the consequences can be fatal. Multilingual safety infrastructure is a moral and legal imperative, not a luxury.

2c. The LEP Entrepreneur: Green Leadership Under-Resourced

The story of LEP communities in the clean energy economy extends beyond the job site to the business ownership and entrepreneurship dimension — and the data here are both encouraging and sobering. The Stanford Latino Entrepreneurship Initiative's 2024 State of Latino Entrepreneurship report documents that Latino-owned businesses (LOBs) are leading on sustainability: 88% of LOBs have adopted at least one green or sustainability initiative, compared to 76% of white-owned businesses. Latino-owned businesses collectively contribute $4.1 trillion to U.S. GDP (LBAN).

Yet these businesses face structural barriers that limit their ability to fully participate in the clean energy economy. Latino-owned businesses face approximately 60% lower loan approval odds from national banks compared to similarly situated white-owned businesses (LBAN). Language-related barriers in outreach, permitting, and business development programs further constrain their access to clean energy incentives under the IRA and related programs.

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Indicator	Data Point	Source
Hispanic/Latino share of solar workforce (2024)	24%	IREC, 2024
Hispanic/Latino share of solar workforce (2019)	17.2%	IREC, 2022
Total solar workers in the U.S. (2024)	280,119	IREC, 2024
Solar & storage combined U.S. employment (2024)	464,053	IREC, 2024
Wind turbine technician job growth projected (2024–2034)	50% (fastest in U.S.)	BLS, 2024
Solar PV installer job growth projected (2024–2034)	42% (2nd fastest in U.S.)	BLS, 2024
Latino-owned businesses with green/sustainability initiatives	88% (vs. 76% white-owned)	SLEI, 2024
Latino-owned business contribution to U.S. GDP	$4.1 trillion	LBAN
Foreign-born persons under 18 in Franklin County, OH	23.6%	U.S. Census Bureau, 2016

The evidence is clear: non-English speaking and LEP individuals are not peripheral to the clean energy economy. They are central to it. They install the panels, service the turbines, and lead businesses that are measurably more likely to embrace green practices than their white-owned counterparts. What is missing is the infrastructure — linguistic, educational, and policy — to ensure they can fully participate in its prosperity.

Section 3. Lessons from ESL/EL Education: Applying Evidence-Based Frameworks to Workforce Training

The field of English as a Second Language (ESL) education has produced a substantial evidence base over several decades — evidence about what works, what does not, and what is at stake when language learners are not adequately supported. Dr. Golatt's doctoral dissertation research, conducted in the Forrest City School District — a fictional school district in Columbus, Ohio created for the purposes of the dissertation research — contributed directly to this body of knowledge, examining ESL practices in an urban school district with a large and growing immigrant student population. The findings of

that research — and the broader literature it engaged — carry profound implications for clean energy workforce training. This section draws those connections explicitly.

3a. The Language Acquisition Timeline Problem
Perhaps the most consequential insight from the ESL research literature — and one of the most frequently ignored by policymakers — is the finding that it takes English language learners between 4 and 7 years to attain full academic English proficiency (Hakuta, Butler & Witt, 2000; Cummins, 1996). This is a far longer timeline than most institutions — schools, employers, and training providers alike — are designed to accommodate.

Golatt's dissertation research found that in the Forrest City School District (pseudonym), as in districts across the country, the institutional response to this reality was often inadequate. Research by McKeon (1994) found that 75% of non-English speaking school children are placed with teachers who have no training in second language acquisition, ESL, or bilingual education. The implications for clean energy workforce training are direct and troubling: if three-quarters of EL students are taught by instructors unequipped for their linguistic needs, it is reasonable to assume a comparable — if not greater — deficit exists among clean energy training program instructors.

Rushed, English-only workforce training programs fail LEP workers in precisely the same way that inadequate two-year immersion programs failed EL students in Golatt's research — not because the learners lack capability, but because the system lacks the infrastructure to meet them where they are.

Research Insight

English language learners require 4–7 years to attain full academic language proficiency (Hakuta, Butler & Witt, 2000). Yet most clean energy training programs — apprenticeships, safety certifications, NABCEP prep courses — are designed for delivery in days or weeks, entirely in English, with no accommodation for language acquisition stages. This structural mismatch is not the worker's failure. It is a design failure.

3b. Sheltered Instruction: A Model for Energy Training Programs
One of the most rigorously studied and validated frameworks in ESL/EL education is the Sheltered Instruction Observation Protocol (SIOP). Developed through a seven-year research project and refined through extensive field testing, SIOP consists of eight interconnected components: lesson preparation, building background, comprehensible input, strategies, interaction, practice and application, lesson delivery, and review and assessment (Echevarria et al., 2008; Kareva & Echevarria, 2013). The protocol is not a simplified curriculum — it is a pedagogical framework for making rigorous, grade-level content simultaneously accessible to language learners.

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The evidence base for SIOP is compelling. Teachers trained in SIOP produced students who outperformed their peers in both reading and writing (Richards-Tutor et al., 2016). The model achieves this by making the language of instruction explicit — articulating not just content objectives, but language objectives — and by using visual supports, manipulatives, structured interaction, and scaffolded tasks to make complex content comprehensible without simplifying it.

The application to clean energy training is both logical and actionable. Solar installation training, wind turbine technician certification, electrical safety orientation, and permitting navigation are all content-rich, technically demanding domains — precisely the kinds of domains for which sheltered instruction was designed. A "Sheltered Energy Training" protocol modeled on SIOP would articulate content language objectives for each training module; use visual schematics, bilingual glossaries, and manipulative models; structure peer interaction to build both technical and linguistic competency; and embed language assessment into competency verification processes.

3c. Primary Language Support

A second foundational principle from the ESL research literature concerns the role of the learner's primary language. Richard Ruiz (1984), whose work is cited extensively in Golatt's dissertation, articulated the distinction between viewing language as a problem, a right, or a resource. Programs that view the primary language as a resource — rather than an obstacle to be overcome — consistently produce better outcomes for language learners.

The research literature is unambiguous on this point. Proper use of the primary language makes instruction more comprehensible, accelerates English acquisition, and improves content mastery (Wright, 2008). Studies of bilingual education programs have found that students in well-designed bilingual programs consistently outperform peers in English-only settings on standardized assessments — even in English — over a period of five to seven years (Thomas & Collier, 2002).

The implications for clean energy workforce training are direct. Solar and wind training programs should offer key materials, safety documentation, certification preparation resources, and onboarding processes in the primary languages of their workforce — with Spanish as the highest-priority language given current workforce demographics, but also including Somali, Amharic, Arabic, Haitian Creole, and other languages reflecting the diversity of immigrant communities in cities like Columbus, Ohio. This is not a concession to language barriers — it is a strategic investment in workforce competence. Hammertech Systems' 2024 research confirms that contractors are actively seeking multilingual language support throughout the project lifecycle, not merely at orientation.

3d. Family and Community Partnerships: Adapted to Employer and Community Partnerships

The third pillar of evidence-based ESL/EL practice with direct applicability to the clean energy workforce is the model of family and community partnerships. Golatt's dissertation research, drawing on the broader literature, found that effective programs for EL students build robust partnerships with families — communicating in the primary language, employing bilingual staff, translating documents, and creating peer-to-peer support networks among families navigating similar experiences (Richards-Tutor et al., 2016).

Translated into the workforce development context, this framework calls for employer-community partnerships that mirror the school-family model. Clean energy employers, workforce training providers, and community-based organizations (CBOs) should co-create culturally competent navigation support for LEP workers — including bilingual HR staff and safety officers, peer mentorship among workers sharing linguistic backgrounds, multilingual outreach for recruitment and advancement opportunities, and partnerships with immigrant-serving organizations capable of bridging the cultural and linguistic gap between employer expectations and worker experience.

The National Clean Energy Workforce Alliance, coordinated by IREC, has already articulated the need for community-based organizations, energy justice organizations, and workforce programs with wraparound services to remove barriers for underrepresented workers. The ESL/EL literature provides a tested, evidence-based model for what those wraparound services should look like when language is the central barrier.

ESL/EL to Clean Energy: A Framework Comparison

The following table summarizes the parallel between evidence-based ESL/EL education best practices and their proposed applications to clean energy workforce training — the core analytical contribution of this paper.

ESL/EL Education Best Practice	Application to Clean Energy Workforce Training
Sheltered Instruction Observation Protocol (SIOP): Eight-component framework using visual supports, comprehensible input, explicit language objectives, and scaffolded content delivery for EL students.	**Sheltered Energy Instruction Protocol (SEIP):** Adapt SIOP for installer training, safety certification, and apprenticeship programs — with bilingual glossaries, visual schematics, and language objectives embedded in all technical modules.
Primary Language Support: Use of the learner's native language as a resource to accelerate English	**Multilingual Training Materials:** Provide safety documentation, NABCEP certification prep, onboarding materials, and permitting

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ESL/EL Education Best Practice	Application to Clean Energy Workforce Training
acquisition and deepen content mastery; bilingual instructional materials and staff.	guidance in Spanish, Somali, Arabic, Amharic, and other languages of the workforce. Bilingual trainers and job site safety officers.
Long-Term Language Acquisition Timeline: Recognition that full academic English proficiency takes 4–7 years; training and assessment designed to meet learners at their current proficiency level.	**Proficiency-Tiered Training Design:** Design apprenticeship and continuing education programs with multiple entry points, tiered language supports, and assessment instruments validated for use with LEP learners — not single-entry English-only programs.
Family-School Partnerships: Bilingual communication with families, bilingual staff, translated documents, parent-to-parent support networks, culturally competent community liaisons.	**Employer-Community Partnerships:** Bilingual HR and safety staff, peer mentorship networks among workers, partnerships with CBOs and immigrant-serving organizations, multilingual recruitment and advancement communications.
Primary Language as a Resource (Ruiz, 1984): Productive programs view linguistic diversity as an asset to be cultivated, not a deficit to be remediated.	**Multilingual Workforce as Competitive Advantage:** Employers serving diverse markets — including international solar supply chains and multinational clean energy companies — benefit from a multilingual workforce. Reframe LEP as a competency, not a constraint.
Bilingual Education Outcomes: Students in well-designed bilingual programs outperform English-only peers on standardized assessments over a 5–7 year horizon (Thomas & Collier, 2002).	**Long-Term ROI of Multilingual Training:** Contractors and employers investing in multilingual onboarding and training will see lower turnover, higher safety compliance, faster certification attainment, and stronger worker retention among LEP workers.
K–12 EL Career Relevance: ELL students are future workforce participants; language instruction should be connected to vocational contexts and career aspirations.	**K-to-Career Clean Energy Pipelines:** CTE programs in urban school districts with large EL populations should introduce clean energy career pathways during students' language acquisition years — connecting linguistic and vocational learning in culturally relevant ways.

Section 4. Policy Implications and Recommendations

The evidence assembled in this paper supports a set of concrete, actionable policy recommendations directed at federal agencies, state workforce boards, clean energy employers, community development institutions, and urban school districts. These recommendations are designed to be mutually reinforcing — together comprising a systemic approach to language-inclusive clean energy workforce and economic development.

Recommendation 1
Mandate Multilingual Training Standards in Clean Energy Apprenticeship Programs
Federal and state workforce agencies — including the U.S. Department of Labor's Office of Apprenticeship — should require that Registered Apprenticeship Programs (RAPs) in solar, wind, and energy storage industries provide core safety training, technical instruction, and assessment instruments in the primary language(s) of the workforce. The IRA's workforce provisions, including its prevailing wage and apprenticeship requirements, create both a mechanism and a mandate for this standard. States with large Hispanic/Latino clean energy workforces — including California, Texas, Florida, Nevada, and Ohio — should develop pilot programs for multilingual RAPs within 18 months of this paper's submission.

Recommendation 2
Adopt a Sheltered Energy Instruction Protocol (SEIP)
The U.S. Department of Energy (DOE) and the Solar Energy Industries Association (SEIA), in partnership with IREC and leading workforce training providers, should develop and disseminate a Sheltered Energy Instruction Protocol (SEIP) modeled on the evidence-based SIOP framework. The SEIP should articulate content language objectives for each module of solar and wind installer training, NABCEP certification preparation, and continuing education programs. DOE's Office of Energy Efficiency and Renewable Energy (EERE) should fund development of open-access SEIP curriculum resources in a minimum of five languages within 24 months.

Recommendation 3
Expand Multilingual Safety Infrastructure
OSHA, DOE, and state energy offices should fund a dedicated multilingual safety infrastructure initiative targeting the solar and wind installation workforce. This initiative should include: (1) translated written safety materials in all languages spoken by more than 5% of a contractor's workforce; (2) multilingual digital safety management platforms for job site documentation and incident reporting; (3) funding for bilingual safety officers at installation sites with a majority LEP workforce; and (4) OSHA 10 and OSHA 30 training programs available in Spanish as a standard offering, with additional languages available on request. Hammertech Systems' 2024 research confirms that contractors are actively seeking these solutions — federal and state investment can accelerate their adoption.

Recommendation 4
Invest in LEP-Inclusive Business Development for Clean Energy Entrepreneurs

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The IRA's clean energy tax credit programs, combined with DOE's Loan Programs Office and SBA resources, represent an unprecedented opportunity to support LEP-owned businesses in the clean energy sector. Yet access to these programs requires navigating complex English-language application processes, legal documentation, and technical specifications. Given that Latino-owned businesses face approximately 60% lower loan approval odds from national banks (LBAN) and are leading on green business adoption (88% have adopted at least one green initiative, SLEI 2024), CDFIs, SBDCs, and state energy offices should develop culturally tailored, multilingual clean energy business development programs — with bilingual navigators, translated IRA incentive guides, and culturally competent technical assistance — specifically targeting LEP entrepreneurs in the solar installation, distributed energy, and energy efficiency sectors.

Recommendation 5
Build K-to-Career Pipelines in Urban EL Programs
Urban school districts with large EL populations — including Columbus City Schools and comparable districts in cities participating in the NGIN Cityscapes Summit — should develop Career and Technical Education (CTE) pathways that introduce EL students to clean energy careers during their language acquisition years. These pathways should integrate English language development with solar installation fundamentals, energy efficiency principles, and clean energy entrepreneurship — creating curricular sequences that are simultaneously linguistically supportive and vocationally relevant. Partnerships with local solar installers, utility companies, community colleges, and workforce development boards should provide work-based learning experiences that connect classroom language instruction to real clean energy job sites. Franklin County, Ohio — where 23.6% of foreign-born persons are under 18 (U.S. Census Bureau, 2016) — is an ideal pilot site for this model.

Section 5. Implications for Cities and Economic Development

The NGIN Cityscapes Summit convenes under the theme "Igniting Innovation. Powering Economies." This paper contends that the most significant innovation available to cities with large immigrant and LEP populations is not primarily technological — it is structural. It is the decision to design workforce and economic development systems that include, rather than exclude, the workers and entrepreneurs who are already driving the clean energy transition.

5a. The Urban LEP-Clean Energy Nexus
Cities with large immigrant populations are simultaneously experiencing two phenomena that, viewed together, represent both a challenge and an extraordinary opportunity: rapidly growing labor demand in clean energy — fueled by the IRA, state renewable portfolio standards, and municipal clean energy commitments — and a large, undertapped LEP workforce with significant representation already in the sector. Columbus, Ohio exemplifies this dynamic. A city with one of the most diverse immigrant populations in the Midwest, home to communities speaking Somali, Amharic, Arabic,

Spanish, Nepali, and dozens of other languages, Columbus is also a city with ambitious clean energy goals and a growing solar and efficiency installation workforce.

For cities like Columbus, the question is not whether LEP workers will participate in the clean energy economy — they already are. The question is whether they will do so safely, with access to advancement, certification, and business ownership, or whether they will remain in the lowest-wage, highest-risk tiers of a sector that is otherwise producing family-sustaining careers.

5b. Community Wealth, Ownership, and the Clean Energy Dividend

One of the central themes of the NGIN Cityscapes Summit is Community Wealth and Ownership: the principle that equitable economic development is not just about job creation, but about building assets, ownership, and generational wealth in communities that have historically been excluded from economic growth. This principle maps directly onto the clean energy workforce equity agenda.

When a LEP solar installer attains NABCEP certification, they move from an hourly installation wage to a supervisory or technical credential that commands significantly higher earnings. When a Latino-owned roofing company successfully pivots to include solar installation — supported by multilingual IRA incentive guides, bilingual CDFÍ loan navigators, and culturally competent technical assistance — it builds business equity that can be transferred across generations. When an EL student in Columbus City Schools completes a clean energy CTE pathway and enters a registered apprenticeship upon graduation, the city retains the clean energy dividend in the community that built it.

"What if the real challenge isn't attracting wealth — but keeping it?"
— NGIN Cityscapes Summit

Language-inclusive clean energy workforce and business development is not a social welfare program. It is a community wealth strategy. It is the mechanism by which cities ensure that the green economy dividend — the jobs, the contracts, the certifications, the business equity — accrues to the communities doing the work, not merely to the firms and investors directing it.

5c. The Future of Economic Development Is Multilingual

The NGIN Cityscapes Summit also engages the theme of the Future of Economic Development — the question of what tools, frameworks, and innovations will define how cities build prosperity in the decades ahead. This paper argues that language-inclusive clean energy workforce development is precisely such an innovation.

Traditional economic development frameworks have often treated language as a barrier to be overcome by assimilation — a problem that immigrant communities would solve on their own over time. The ESL/EL research literature, and Dr. Golatt's dissertation work in particular, demonstrates that this approach fails: it fails the learners, it fails the schools, and — as this paper argues — it will fail the clean energy employers and cities that depend on a multilingual workforce without building the infrastructure to support it.

The innovation is not a technology. It is a reframing: from language as a problem to language as a resource; from assimilation as the strategy to inclusion as the

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investment. Cities that make this investment — that develop multilingual clean energy training programs, LEP-inclusive business development services, and K-to-career EL pipelines — will find themselves with workforce advantages that are not easily replicated. They will have a deeper, more diverse, more resilient pool of clean energy workers and entrepreneurs. They will have communities with a greater stake in the clean energy transition. And they will have demonstrated, in practice, that economic development and equity are not competing values — they are the same value, pursued with intention.

A Note for NGIN Member Cities

Cities participating in the NGIN Cityscapes Summit are uniquely positioned to serve as pilot sites and peer-learning networks for language-inclusive clean energy economic development. The NGIN model of peer city exchange, combined with the policy frameworks proposed in this paper, offers a pathway for NGIN cities to collectively develop, test, and scale multilingual clean energy workforce and business development programs — sharing lessons across city contexts and building the evidence base for national policy adoption.

Conclusion

The clean energy transition is not a future event. It is happening now, and it is being built — panel by panel, turbine by turbine, connection by connection — by a workforce that is disproportionately Hispanic, immigrant, and non-native English speaking. The workers filling the #1 and #2 fastest-growing occupations in the United States are, in significant measure, individuals who learned to work in a language they are still learning to speak. That is not a problem to be solved. It is a reality to be honored — and a challenge to be met with the same rigor and intentionality that the best ESL/EL educators have brought to their work for decades.

Dr. Golatt's research in the Forrest City School District (pseudonym) demonstrated that the barriers facing English Learners are not insurmountable. They are addressable — through evidence-based instruction, primary language support, and robust community partnerships. The evidence is clear: when the right frameworks are applied with fidelity and intention, language learners thrive. They outperform their peers. They close the gap. They build futures.

The same is possible in the clean energy workforce. A Sheltered Energy Instruction Protocol can make technical training accessible to LEP workers without sacrificing rigor. Multilingual safety infrastructure can save lives. Bilingual apprenticeship programs can accelerate certification attainment. LEP-inclusive business development can unlock the green entrepreneurship potential of Latino-owned and other immigrant-owned businesses that are already leading on sustainability. K-to-career clean energy pathways in urban EL programs can turn the pipeline — the very same young people sitting in Columbus City Schools today — into the certified installers, supervisors, and business owners of tomorrow.

What is missing is not the workers. What is missing is not the will. What is missing is the infrastructure — educational, linguistic, and policy — that says to those workers: you belong here, and this system is designed for you. The time to build that infrastructure is now. The clean energy transition will not wait. Equity cannot wait either.

Cities that invest in language-inclusive clean energy workforce development are not just building a greener economy — they are building a more equitable one. And a more equitable economy is, in the end, the stronger one.

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