

The Digest’s 2026 Multi-Slide Guide to Workforce Strategy for Regional Bioeconomy Hubs

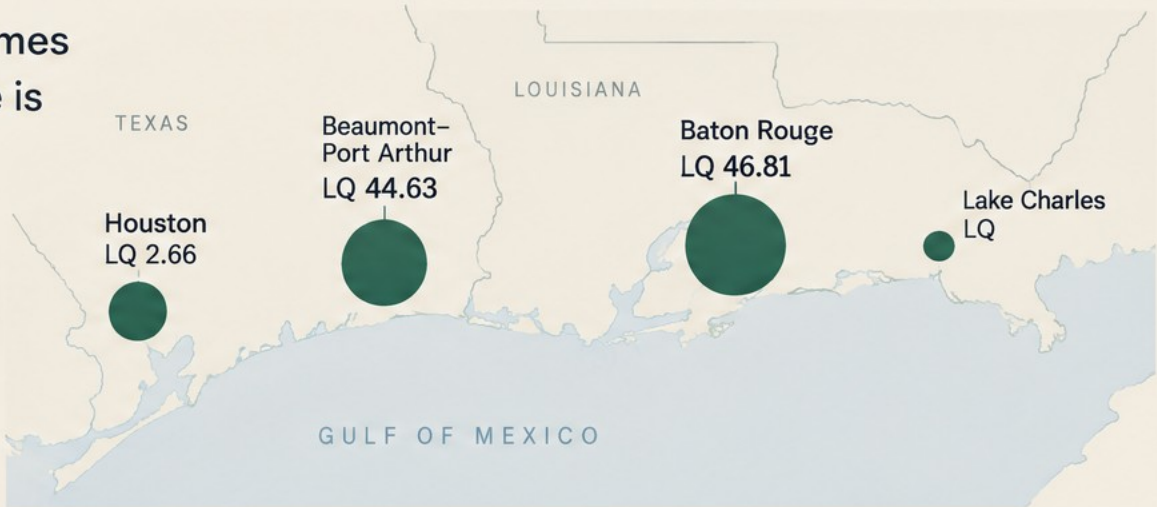
Gulf process metros concentrate operators at more than 40 times the national rate — and pay for them. A shared training pipeline is a regional asset; overlapping project peaks are its tax.

LQ 46.81

Baton Rouge chemical plant and system operators

The occupation is 46.81 times more concentrated than nationally.

? What does a dense, multi-employer operator workforce let a new project inherit, what does overlapping project demand make scarce, and who can build the shared pipeline?



KEY EVIDENCE: OPERATOR CONCENTRATION AND PREMIUM

	Location quotient (LQ)	Mean wage vs. national
Baton Rouge (chemical plant & system operators)	46.81	\$92,840 vs. \$79,450 (+17%)
Houston (chemical plant & system operators)	2,660 jobs	\$103,740 (+31%)
Beaumont-Port Arthur (petroleum pump system operators)	44.63	—

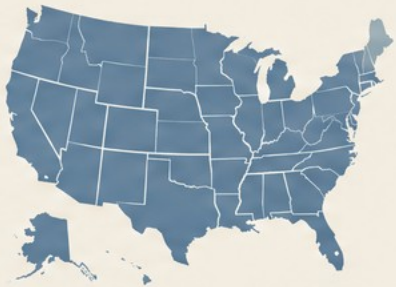
Percentage premiums are calculated from BLS means and are not adjusted for cost of living or shift and hazard pay.

Source: US Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2023.

A place story, not a shortage story

THE NATIONAL SHORTAGE FRAMING

A national narrative suggests a lack of workers across the country.



- ✗ Seen as a nationwide problem
- ✗ Assumes a thin talent pool
- ✗ Suggests long lead times for new projects
- ✗ Ignores regional differences

The national shortage frame misses what's possible in the right places.

THE REGIONAL DENSITY FRAMING

In the Gulf, many plants employ the same occupations, creating a deep, multi-employer operator pool.

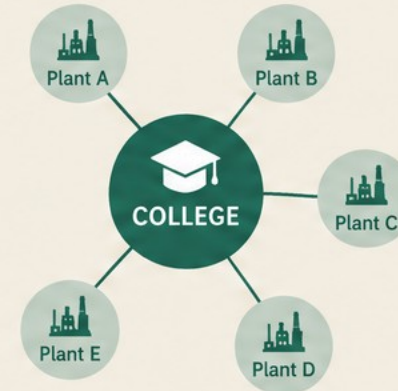


MULTIPLE EMPLOYERS
(same occupations)



NEW PROJECT
recruits experienced operators (instead of training from scratch)

Colleges build programs that serve every employer at once.



THIS GUIDE IS ABOUT PLACE, NOT A NATIONAL SHORTAGE.

The Gulf Coast shows the strongest version of this: process occupations concentrated at more than 40 times the national rate.

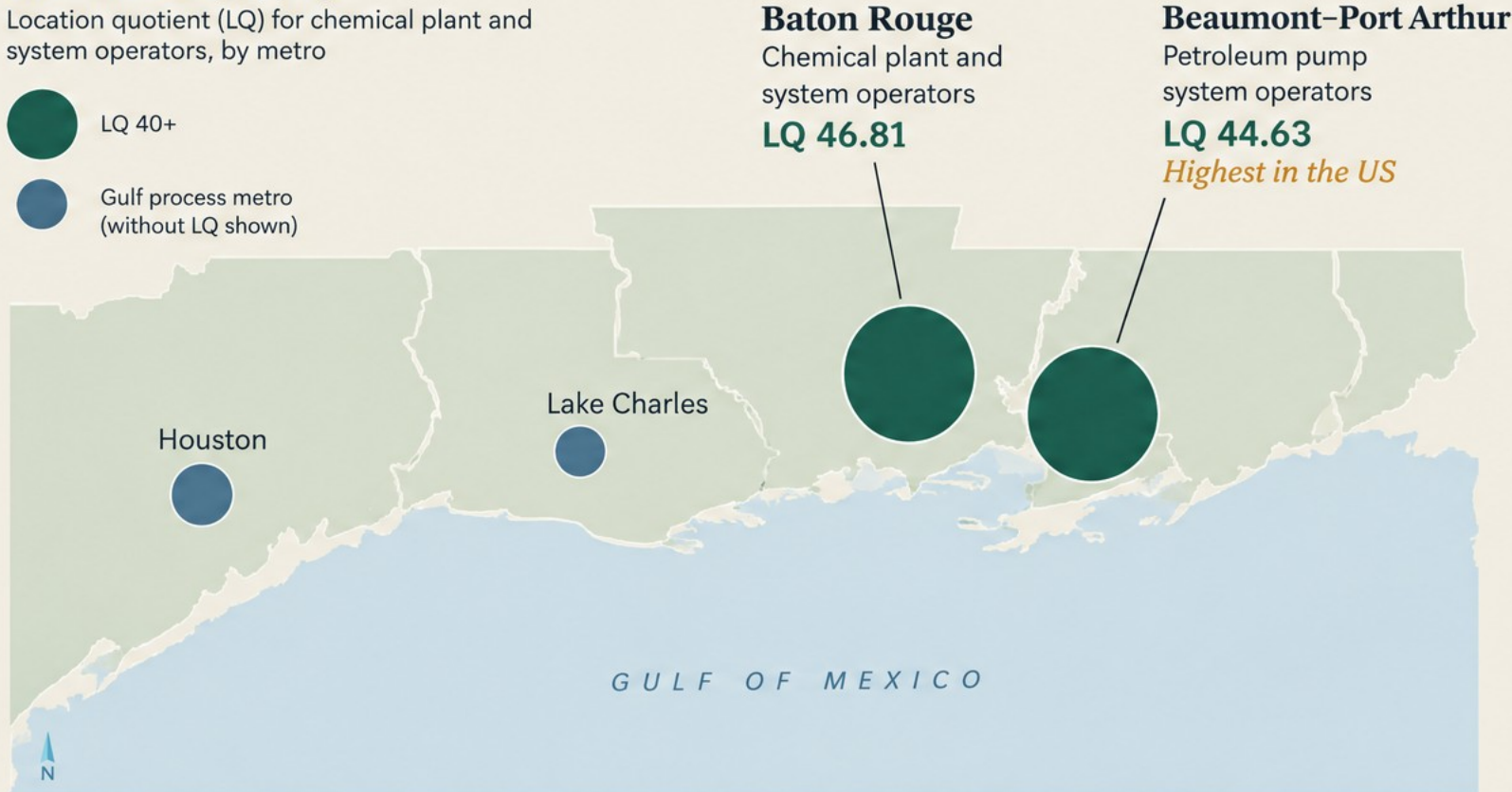
Density has a price — wage premiums — and a limit: when several megaprojects peak together, construction demand can exceed the local craft base.

ANALYTICAL ILLUSTRATION

Where operators concentrate: the Gulf runs at more than 40 times the national rate

GULF PROCESS METROS

Location quotient (LQ) for chemical plant and system operators, by metro



KEY LOCATION QUOTIENTS

46.81

Baton Rouge

Chemical plant and system operators
(LQ 46.81)

44.63

Beaumont-Port Arthur

Petroleum pump system operators
(LQ 44.63, *highest in the US*)

OTHER GULF PROCESS METROS

- Houston
- Lake Charles

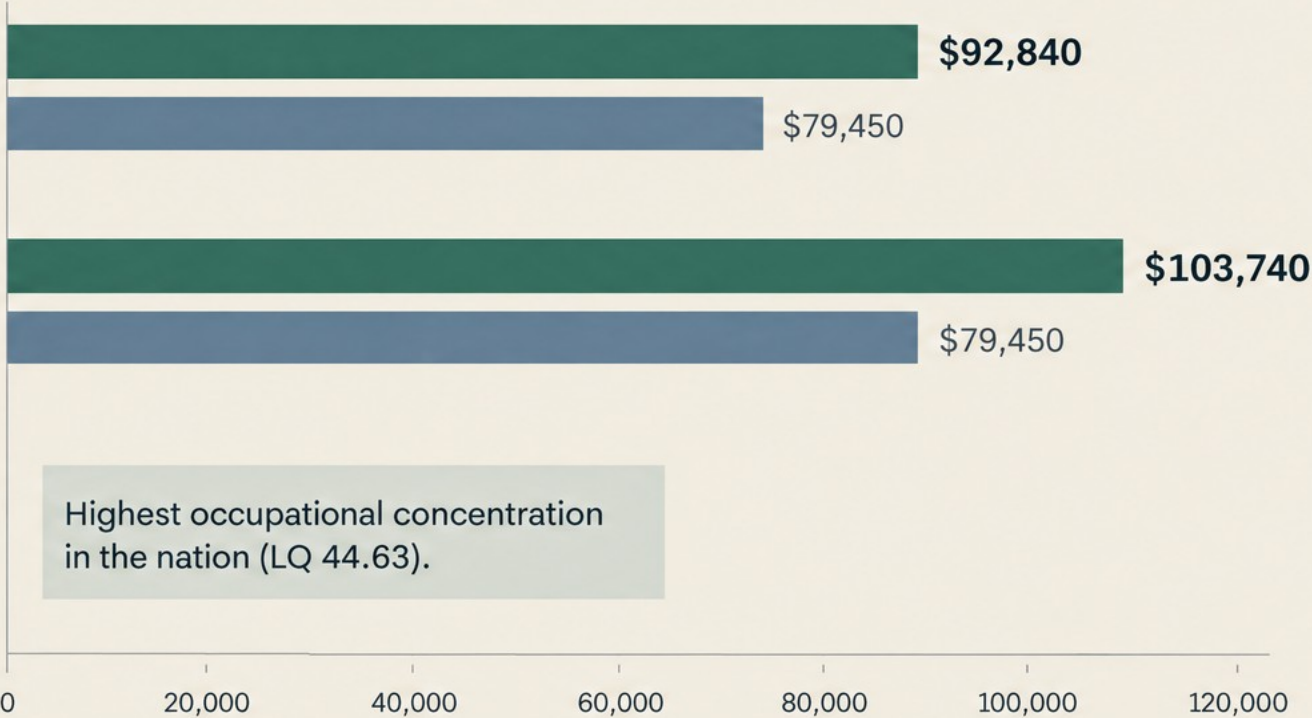
What density costs: the pool commands a premium

Wage premium vs. national mean

(operator / chemical plant and system operators, where noted)

Baton Rouge

Chemical plant and system operators
(LQ 46.81)



+17%
vs. national mean

Houston

Chemical plant and system operators
(2,660 jobs)

+31%
vs. national mean

Beaumont-Port Arthur

Petroleum pump system operators
(LQ 44.63, highest in US)

Highest occupational concentration
in the nation (LQ 44.63).

Metro mean wage
National mean wage

Density without a premium: concentration alone does not set pay

Baton Rouge

CHEMICAL PLANT AND SYSTEM OPERATORS

A different occupation. A different outcome.

LQ 46.81

The occupation is 46.81 times more concentrated than nationally.

+17%

Mean wage \$92,840 vs. national \$79,450.

Durham–Chapel Hill

BIOLOGICAL TECHNICIANS

High concentration. Lower pay.

LQ 9.12

The occupation is 9.12 times more concentrated than nationally.

–12%

Mean wage is 12% below the national mean.



The takeaway

Concentration creates options. Pay depends on the local labor market, the occupation and the training supply.

The shared training asset: one program, many employers

40+
corporate
partners



ANALYTICAL ILLUSTRATION

ENROLLMENT ROSE

32%

to more than

1,300

in summer 2025

Keeping graduates in the region

85%
of NC State BTEC
graduates stay in
North Carolina

450 BTEC trains about 450 degree
and certificate students a year

+500–700 Plus 500–700 industry
trainees a year

Retention is the payoff of a
shared pipeline.

BTEC AT NC STATE

Trains about 450 degree and certificate students a year, plus 500–700 industry trainees, with 85% of graduates staying in North Carolina.

SAN JACINTO COLLEGE

LyondellBasell Center for Petrochemical, Energy and Technology has 40+ corporate partners; enrollment rose 32% to more than 1,300 in summer 2025.

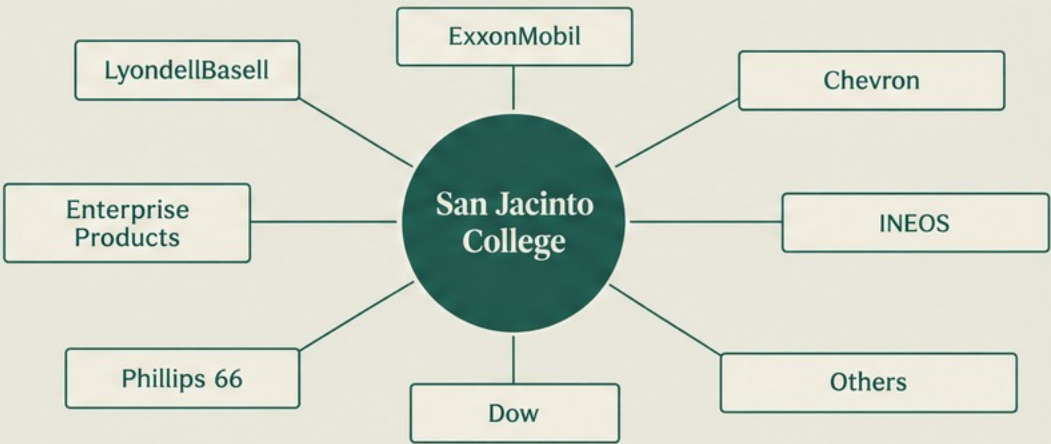
THE BIGGER PICTURE

A strong training pipeline builds a regional workforce, serves multiple employers and increases resilience across the bioeconomy.

CORRELATED DISRUPTION

The Lake Charles metro lost 6.7% of its population in 2020 after Hurricane Laura. *(The Advocate, 2021).*

ANALYTICAL ILLUSTRATION



What a new project inherits

A new project doesn't have to build a workforce from scratch. It can inherit:



Recruited experienced crews

A pool of operators with real-world experience, ready to work.



Shared college programs

Training programs that already serve every employer in the region.



Experienced supervisors

Leaders drawn from a multi-employer pool, not just one company.

ANALYTICAL ILLUSTRATION



KEY POINT

These are things the project does not have to build.

Conceptual schematic.
No claim of faster commissioning or lower operating risk — no regional comparison exists.

When projects peak together: the cluster tax

Lake Charles October 2026 peak

Workers needed
at peak

11,012

Local base
of workers

5,262

Peak demand is

209%

of local base.

Overlapping megaprojects
make the labour pool a
contested input.



THE CLUSTER TAX



More projects.

Simultaneous megaprojects increase demand for the same skilled occupations.



Tighter labour supply.

The local craft base can't meet peak construction demand.



A contested input.

When peaks overlap, labour becomes a scarce, more expensive resource — the cluster tax.

Statewide pressure: six megaprojects, one craft base

CONSTRUCTION WORKERS NEEDED
AT LATE-2026/EARLY-2027 PEAK

20,500

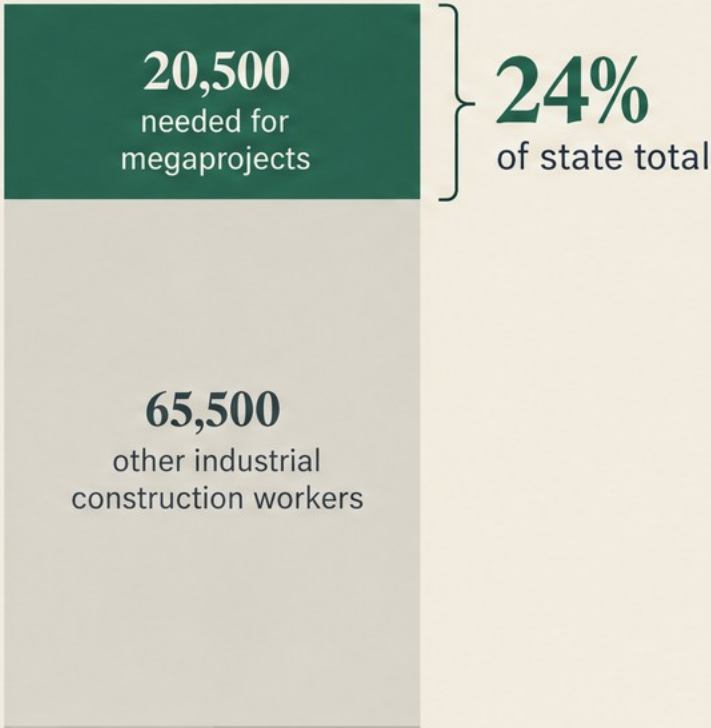
construction workers

ABOUT

24%

of the state's roughly
86,000 industrial
construction workers

SIX LOUISIANA MEGAPROJECTS



Total state industrial construction workers
≈ 86,000



THE SIX LOUISIANA MEGAPROJECTS



Lake Charles



Baton Rouge



Beaumont-Port Arthur



Houston (LA)



Other Gulf Coast metros



Additional projects

What congestion cost last time: Sasol's Lake Charles project

BEFORE / AFTER CAPEX

\$8.9bn

2014



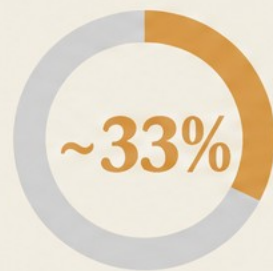
\$11bn

2016

+24% CAPEX INCREASE

THE COST DRIVER

Sasol attributed about one-third of the overrun to higher contractor wage rates and contracts awarded at elevated rates.



OF OVERRUN

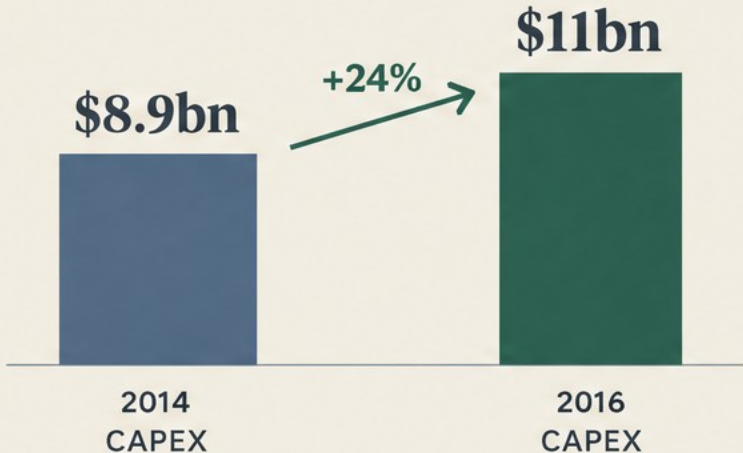
ATTRIBUTED TO HIGHER
CONTRACTOR WAGE RATES
AND ELEVATED CONTRACTS



PAST CONSEQUENCE

This was a cost overrun on a completed project, not a forecast penalty for future projects.

THE PROJECT TIMELINE



THE OVERALL STORY

Higher contractor wage rates and contracts awarded at elevated rates drove about one-third of the \$2.1bn overrun (2014–2016).

Shared exposure: storms and housing hit the whole pool at once

LAKE CHARLES METRO

6.7%

lost of its population
in 2020

after Hurricane Laura.

Source: The Advocate, 2021.



HURRICANE LAURA

August 2020

Severe storm damage to housing, infrastructure and the local economy across the Gulf Coast.

Gulf Coast metros



The same cluster. The same region. The same shocks.

Housing, infrastructure and population impacts hit all metros at once — and the workforce feels it together.

TIMELINE



Hurricane Laura

August 2020

Storm damage hits the entire Gulf Coast region, disrupting housing, infrastructure and local economies.



Lake Charles 2026 peak October 2026

Six Louisiana megaprojects and the Lake Charles build-out create a new peak in construction demand (11,012 workers in Lake Charles).

Source: Better Louisiana, Sept. 2025.



A CLUSTERED WORKFORCE SHARES CORRELATED DISRUPTION

When housing, population and construction demand all move at once, every employer in the region feels the same pressure.

One storm.
One region.
One workforce
pool.

Two workforce clusters compared: mature Gulf vs training-led North Carolina

WORKFORCE METRIC	Gulf Coast (mature cluster) HOUSTON / BEAUMONT–PORT ARTHUR / BATON ROUGE / LAKE CHARLES	North Carolina (training-led cluster) DURHAM–CHAPEL HILL
 Concentration Location quotient (LQ)	Baton Rouge (chemical plant & system operators): 46.81 Beaumont–Port Arthur (petroleum pump system operators): 44.63 (highest in the US)	Durham–Chapel Hill (biological technicians): 9.12
 Wage premium vs. national mean	Baton Rouge: +17% Houston: +31%	12% below national mean
 Training programs and enrollment	San Jacinto College: 40+ corporate partners; 1,300+ enrolled (summer 2025)	BTEC (NC State): ~450 degree and certificate students + 500–700 industry trainees a year
 Retention stay in region	Not reported	85% of graduates stay in North Carolina

Gulf = legacy density



Process occupations are concentrated at more than 40 times the national rate — and pay a premium.

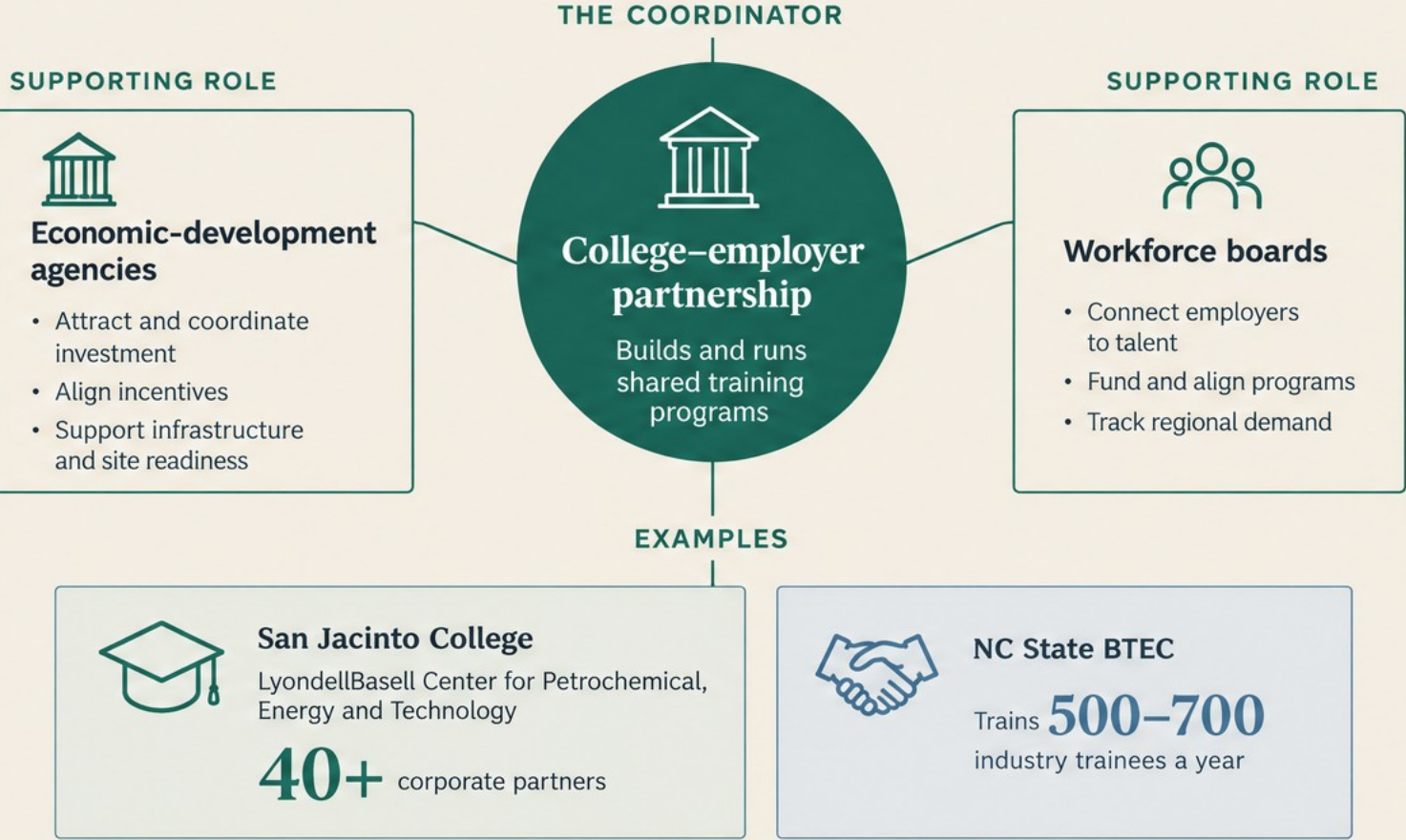


NC = density built by training

High concentration does not produce a premium where training supply is abundant.

Source: BLS OEWS, May 2023; NCBiotech, 2024; San Jacinto College / Control Global, 2025 (institution-reported).
Different occupations are compared; premium percentages not cost-of-living adjusted.

Who can act at cluster scale



The college-employer partnership turns density into an asset, with economic-development agencies and workforce boards as essential allies.

The regional examples

Gulf Coast process metros

(Houston, Beaumont-Port Arthur, Baton Rouge, Lake Charles)

**Demonstrates:**
A multi-employer operator pool and its price.

**Does not demonstrate:**
Faster commissioning or lower operating risk — no regional comparison exists.

North Carolina biomanufacturing

(BTEC, Durham-Chapel Hill)

**Demonstrates:**
A training-led cluster with strong induate retention.

**Does not demonstrate:**
A wage premium — the data show the opposite.
Belongs as the comparator: density built by training rather than by legacy plants.

Lake Charles 2026 build-out and Sasol's 2014-16 project

**Demonstrates:**
Overlapping projects turning the labour pool into a contested input.

**Does not demonstrate:**
A percentage cost penalty for any future project.
Belongs as the contrast: the cluster tax.

Decision test: six questions to apply to a site



Which occupations does this project need, and what is their location quotient here?

Identify the required occupations, measure their concentration (LQ), and compare to national levels.



How many local employers already train and compete for those workers?

Count local employers with relevant programs, assess capacity, and identify overlap in demand.



What wage premium will the project have to match?

Compare local and national wages for the key occupations and calculate the premium needed to attract and retain talent.



Which other projects peak in the same 24 months, and does their combined demand exceed the local craft base?

Map project timelines, add construction demand, and compare to the local craft workforce.



Is there a multi-employer training program, and who funds it?

Confirm whether a shared program exists, which employers participate, and how it's financed.



Would the project find a deeper or cheaper pool elsewhere?

Assess alternative geographies for talent, including lower-cost or larger pools, and the trade-offs.