

The Evolution of West Coast IPA: *What's Changed, What Matters, and How You Can Leverage Data To Create Modern West Coast IPA's*

BEER WORTH FINDING®
VERMONT BREWERS ASSOCIATION

Presenter Bio



CJ Penzone

Background/Education:

- (2021-Present) Brewing Raw Material Sales
- (2014-2021) Professional Brewer
  - Fegley's Brew Works- Brewer & Server
  - Tröegs Independent Brewing- Assistant Brewer
  - Wallenpaupack Brewing Co- Founding Head Brewer
  - Brew Logic Consulting (Self Employed)
- (2017) Siebel Institute of Technology

Current Job/Role:

- Regional Sales Manager- New England @ RahrBSG
- MBAA District NY- Communications/ Membership Chair

Areas of Interest: Recipe Design, Sustainability, Supply Chain Risk Management, Process Optimization

Why is an East Coaster Presenting on West Coast IPA?

- Cut my teeth brewing Classic West Coast IPA's/ Passion for IPA
- Currently helping breweries through collaborations, ingredient selection, and process recommendations
- Having hands on brewing experience and raw material expertise, I offer a unique perspective on how ingredients, processes, and data trends combine to influence beer styles and the industry.
- Hours spent learning directly from brewers leading the charge









What You'll Learn Today

01 Classic West Coast IPA Style Overview

02 Modern West Coast IPA Style Overview

03 Award-Winning Modern West Coast IPA Survey Results

04 Data-Driven Recipe Design

05 Hot & Cold Side Process Considerations

Classic West Coast IPA Style Overview

Section 1

When you think about Classic West Coast IPA What Comes to Mind?

- **Malt Character**
  - **(Caramel Malt Was Still Cool!)**
- **Bitterness**
- **Citrus/ Pine Aroma and Flavor**
- **"C" Hops**
- **Mouthfeel**
- **Balance**





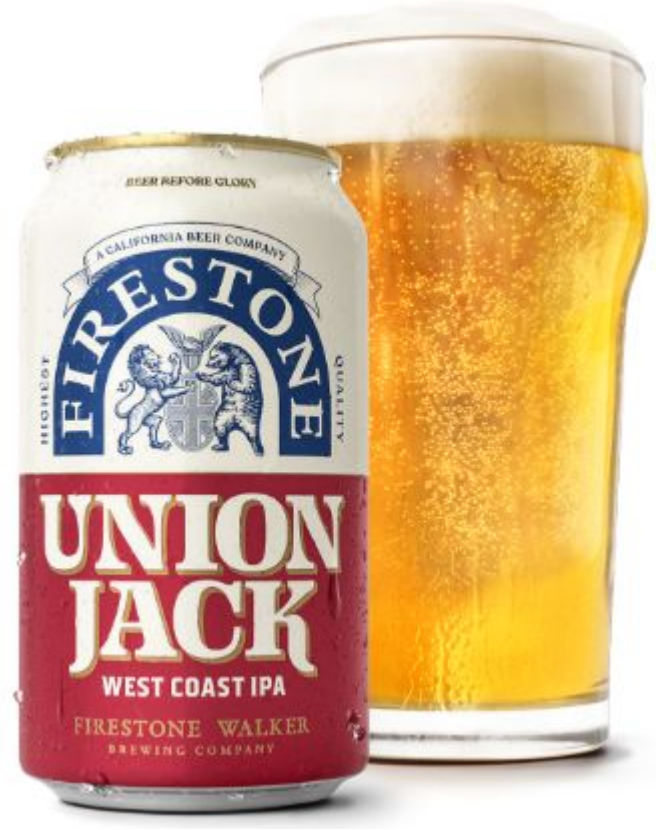








Key Attributes of Classic West Coast IPA



7.0% ABV/ 8.5 SRM

World Beer Cup 112. Classic India Pale Ale

A. American-Style India Pale Ale

Color: Pale ——————▶ Copper

Clarity: Chill Haze & Hop Haze: Acceptable

Malt Aroma & Flavor: Medium-Low ——▶ Medium

Body: Medium- Low ——————▶ Medium

OG: 14.7- 17.1oP

FG: 2.5- 4.1oP

ABV: 6.3%- 7.5%

SRM: 4 - 12

Key Attributes of Classic West Coast IPA



World Beer Cup 112. Classic India Pale Ale

A. American-Style India Pale Ale

Hop Aroma & Flavor: High —▶ Very High

Bitterness: Medium-High ——▶ Very High

IBU: 50 – 70

Fruity Esters: Low ———▶ High

DMS & Diacetyl: ✗

Commercial Examples in 2012

Beer Description	OG	FG	ABV	IBU	SRM
Russian River Blind Pig	15.0	2.4	6.7%	62.0	7.3
Odell IPA	16.5	3.2	7.0%	60.0	9.5
Bear Republic Racer 5	17.7	3.7	7.4%	61.8	8.7
Firestone Walker Union Jack	16.5	3.0	7.5%	75.0	8.0
Fat Head's Headhunter IPA	17.0	3.4	7.5%	87.0	8.5
Lagunitas IPA	15.4	3.0	6.5%	48.6	8.7
Stone IPA	16.0	2.9	6.9%	75.0	9.0
Deschutes Inversion IPA	16.8	4.4	6.8%	80.0	12.0
AVERAGE	**16.4**	**3.3**	**7.0%**	**68.7**	**9.0**

Data From: IPA Brewing Techniques, Recipes, and the Evolution of India Pale Ale; Mitch Steele, 2012

Commercial Examples in 2012

Beer Description	Grain Bill	Hops	Yeast
Russian River Blind Pig	2-Row, C-40, Dextrin	AMA, CEN, CAS, CHI, SIM	Chico
Odell IPA	2-Row, Caramalt, Vienna, Honey	CHI, AMA, CTZ, CEN, SIM, CAS	House Ale
Bear Republic Racer 5	2-Row, C-15, Wheat, Dextrin, Dextrose	CHI, CAS, CEN, CTZ	Liberty
Firestone Walker Union Jack	2-Row, Munich, C-40, Dextrin	MAG, WAR, CTZ, CAS, CEN, AMA, SIM	London
Fat Head's Headhunter IPA	2-Row, Maris Otter, C-10, C-40, Wheat, Dextrin, Dextrose	CEN, CTZ, SIM, CIT	Chico
Lagunitas IPA	2-Row, Munich, C-15	CAS, CEN, CHI, SIM	Chico
Stone IPA	2-Row, C-15	CHI, CTZ, CEN	English
Deschutes Inversion IPA	2-Row, C-60, Munich, Carastan	CEN, CAS, NOR, CIT, HOR, MIL	Chico
Most Common Ingredient	**2-Row, C-10-60, Dextrin**	**Centennial, Cascade, Chinook, Simcoe**	**Chico**

Data From: IPA Brewing Techniques, Recipes, and the Evolution of India Pale Ale; Mitch Steele, 2012

Modern West Coast IPA Style Overview

Section 2

"While the West Coast India Pale Ale style has been around for some time, the style itself has progressed over time from original inception to modern day examples… **These beers are highly attenuated with an assertive hop character and a dry, crisp finish.***"*

-2026 World Beer Cup Style Guidelines

When you think about Modern West Coast IPA, What Comes to Mind?

HOP SATURATED
DRY
PALE
CLEAR
CRISP
TROPICAL
FRUITY
DANK
FIRM BITTERNESS
AROMATIC
HIGH DRINKABILITY

























Key Attributes of Modern West Coast IPA



7.0% ABV/ 4.1 SRM

World Beer Cup 114. West Coast-Style India Pale Ale

Color: Straw ——————▶ Gold

Chill Haze & Hop Haze: Acceptable if LOW

Malt Aroma & Flavor: Low ——————▶Medium-Low

Body Low ——————▶ Medium-Low

Attenuation: High (defining trait)

OG: 13.5- 17.1oP

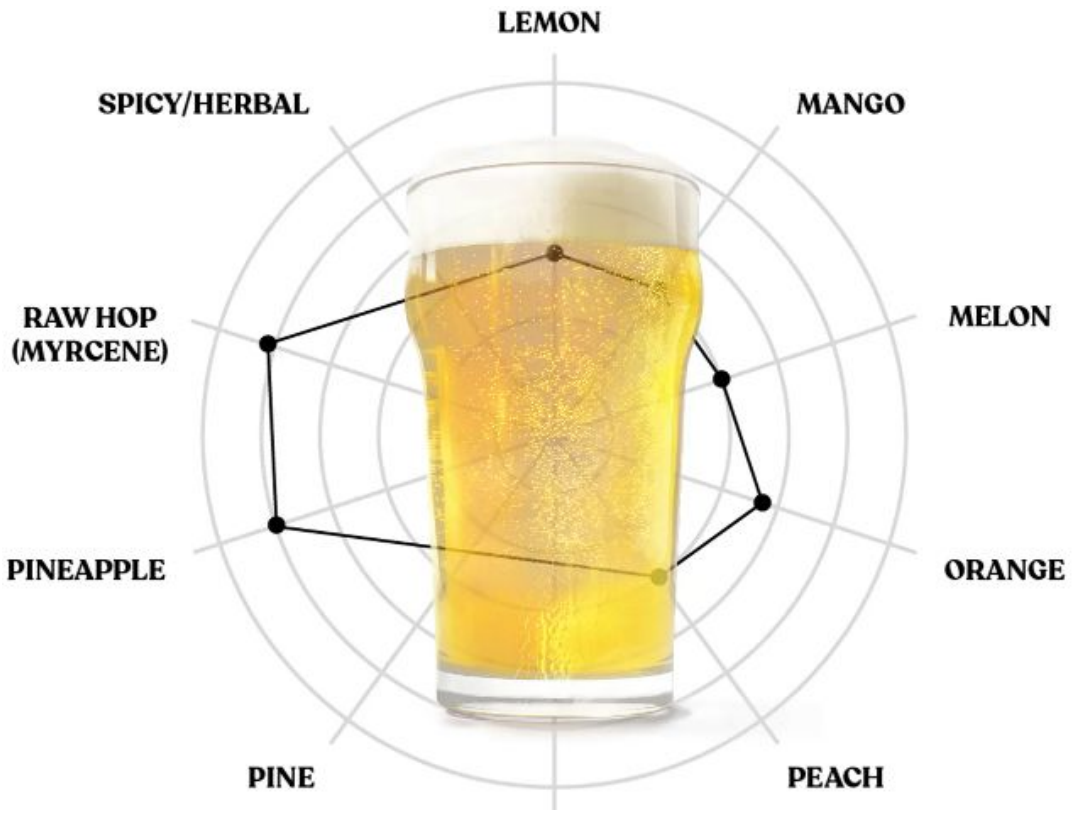
FG: 1.5- 3.0oP

ABV: 6.3% - 7.5%

SRM: 2 - 6

Information from worldbeercup.org and firestonewalker.com

Key Attributes of Modern West Coast IPA



World Beer Cup 114. West Coast-Style India Pale Ale

Hop Aroma & Flavor: High —▶ Very High

Bitterness: Medium-High ——▶ Very High

- NOT Harsh

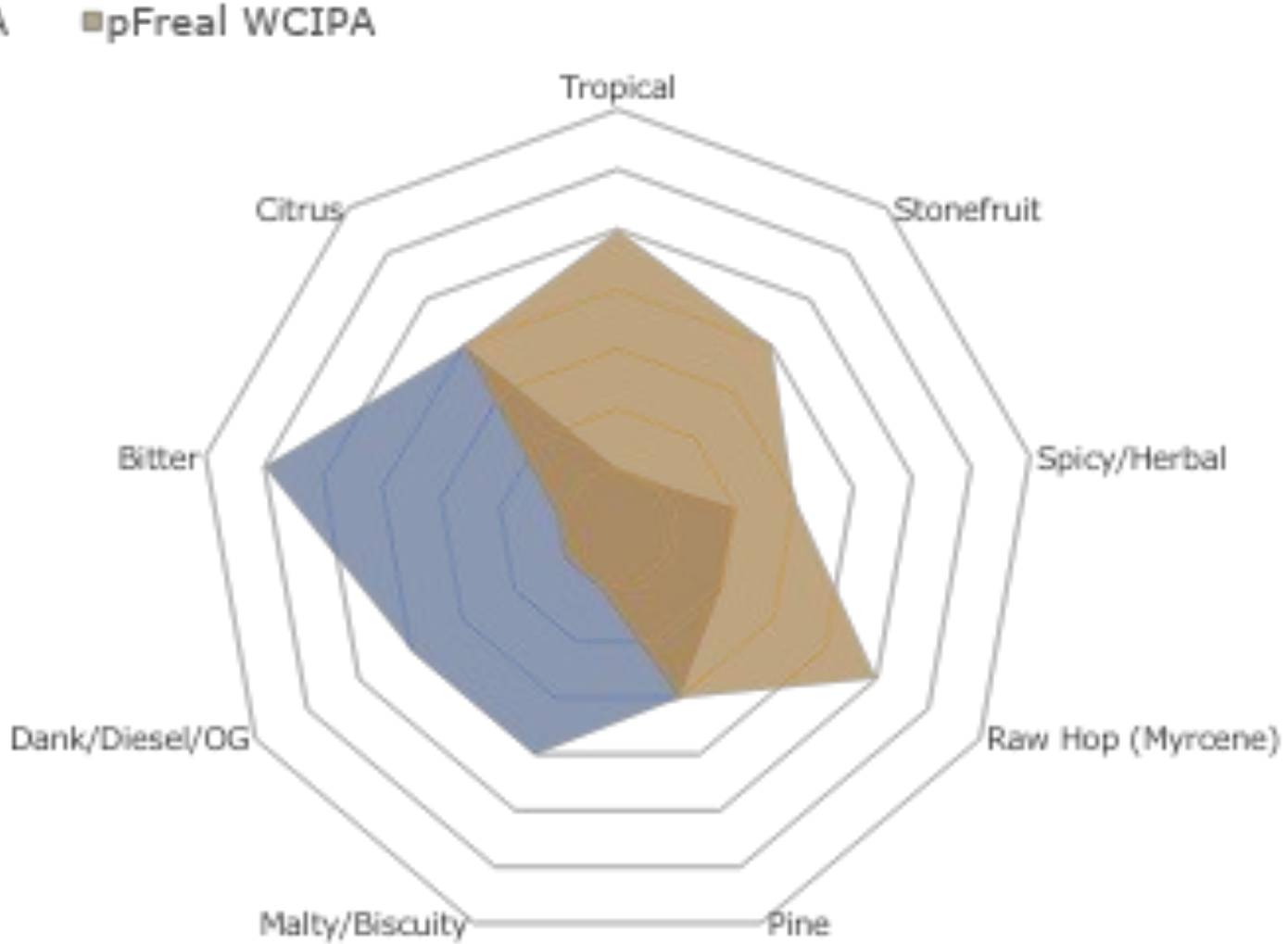
IBU: 50 - 75

Fruity Esters: Low —▶ Medium

DMS, Acetaldehyde, Diacetyl: ✗

Sensory Comparison







What Expectations Changed?

- [x] Color
- [x] Clarity
- [x] Malt Aroma & Flavor
- [x] Body
- [x] Hop Aroma & Flavor
- [x] Bitterness
- [x] Fermentation Character

Award-Winning Modern West Coast IPA Survey Results

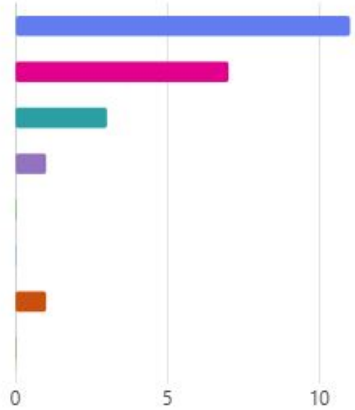
Section 4

Surveyed Group

- **30 Breweries Surveyed**
- **All have won a medal at GABF or WBC between 2023-2026 in one of the following categories:**
  - **American- Style India Pale Ale**
  - **West Coast-Style India Pale Ale**
  - **American-Style Strong Pale Ale**
  - **Imperial-Style India Pale Ale**
- **23 Responses (~77% Response Rate)**
- **20 Technical Oriented Questions, 5 Brewery Related Questions**

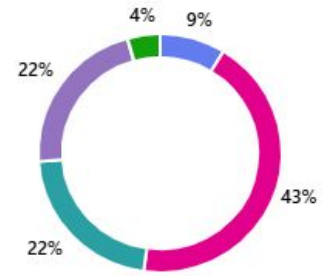
1. Region Located

California	11
Pacific Northwest	7
Rocky Mountain	3
Southwest	1
Midwest	0
Southeast	0
Northeast	1
Other	0



2. Brewery Annual Production (Barrels Produced)

0-999	2
1,000-4,999	10
5,000-14,999	5
15,000-99,999	5
100,000+	1



West Coast-Style IPA Winner Average Specs

OG	FG	ABV	IBU	SRM
14.7	1.7	7.0%	68.4	3.3

7% ABV & 68 IBU remained constant while attenuation increased and color dropped dramatically.

West Coast-Style IPA Winner Common Hopping Amounts/ Timing

WP #/BBL	DH #/BBL	Total #/BBL	Cool WP?	DH During Fermentation?
1.0+	3.0+	4.0+	Yes	No

Typical winners derive more hop intensity from increased whirlpool and dry hop additions vs Classic WCIPA.

Data From: Award-Winning Modern West Coast IPA Production Survey, CJ Penzone, MBAA 2026

West Coast-Style IPA Winner Common Ingredients

Grain Bill	Hops	Yeast
Pilsner **(Base)** **Wheat** **(Foam Retention)** **Dextrose** **(Attenuation)**	**Mosaic** **Simcoe** **Nelson Sauvin** **Strata**	**Ale**

West Coast-Style IPA Winner Hop Products

Most Common Hop Products

T-90 Pellets
Cryo/Concentrated Pellets
CO_2 Hop Extract
Flowable Extract

Advanced hop products are allowing bitterness to remain consistent but more balanced while elevating hop flavors and aromas.

Data From: Award-Winning Modern West Coast IPA Production Survey, CJ Penzone, MBAA, 2026

What the Data Tells Us

Modern WCIPA Is:

- Drier
- Lighter in Color and Body
- More Hop Focused
- More Process Sensitive

Modern WCIPA Is NOT:

- Significantly More or Less Bitter (Measured)
- Higher ABV
- Just a Clear Version of Hazy IPA

How Survey Participants Described Modern West Coast IPA vs Classic West Coast IPA

Sensory Identity

- Bright, crisp, and highly drinkable
- Hop-first, aroma-driven
- Minimal malt distraction
- Fruit-forward hop character
- Dry, snappy, clean finish
- “Pilsner-like” base with IPA hop intensity

Brewing Technique/ Philosophy

- Keep it simple
- Let hops be the focus
- Aim for clarity
- Design for drinkability
- Increased Carbonation

Key Tips from Survey Participants

Modern WCIPA demands process precision!

Water Chemistry

- **Be obsessive about pH**
- **Target a minimum Calcium addition of 100-150 ppm, favor Calcium Sulfate**

Hot Side

- **Cut runoff at or below 5.8 pH/ at or above 2.5oP**
- **Optimize yeast nutrient and kettle finings per recipe**

Fermentation & Yeast Management

- **Choose an appropriate yeast strain**
- **Prioritize yeast health**
- **Control fermentation temperature**
- **Utilize ALDC and good practices to prevent and reduce Diacetyl**

Oxygen Control & Cellaring

- **Target ultra-low dissolved oxygen**
- **Refine cellar practices**
- **Clarity is key. Lean into clarification products, centrifuging if possible.**

Hop Creep

What is it?

- A production phenomenon that has become more prevalent as breweries increase total #/BBL of dry hops.
- Hops contain enzymes that can convert unfermentable dextrins into fermentable sugars, causing potential for secondary fermentation by the yeast.
- Hop Creep has accelerated the natural progression/evolution of Modern WCIPA's

What are the impacts?

- Increased attenuation
- Higher ABV than target
- Diacetyl formation
- Over-carbonation/package instability
- Reduced consistency between batches

How can it be managed?

- Reduce Mash Temp & Original Gravity
- Eliminate or reduce dextrin malts
- Add in Dextrose/Sucrose etc.
- Use a thinner liquor:grist ratio in the mash
- Yeast Selection & Yeast Health
- Encourage it with a pre-terminal dry hop
- Enzymes (ALDC)
- Incorporate advanced hop products to reduce the amount of "green matter"

Data Driven Recipe Design

Section 5

Recipe Outline Comparison

2012 Classic West Coast IPA		2026 Modern West Coast IPA
OG: 16.4	→	**OG:** 14.7
FG: 3.3	→	**FG:** 1.7
ABV: 7.0%	=	**ABV:** 7.0%
IBU: 68.7		**IBU:** 68.4
SRM: 9.0	→	**SRM:** 3.3
Attenuation: 79.9%	→	**Attenuation:** 88.4%
Grain Bill: 2-Row, Dextrin, C-40		**Grain Bill:** Pilsner, Extra Pale Wheat, Dextrose
Hops: Centennial, Cascade, Chinook, Simcoe		**Hops:** Mosaic, Simcoe, Nelson Sauvin
Yeast: Chico Ale		**Yeast:** Chico Ale

How To Adjust Based on the Data

Grain Bill

- Swap 2-Row for Pilsner Malt
- Remove Crystal & Specialty Malts
- Trade Dextrin for Wheat
- Add Dextrose
- Consider Flaked Rice



How To Adjust Based on the Data

Hops

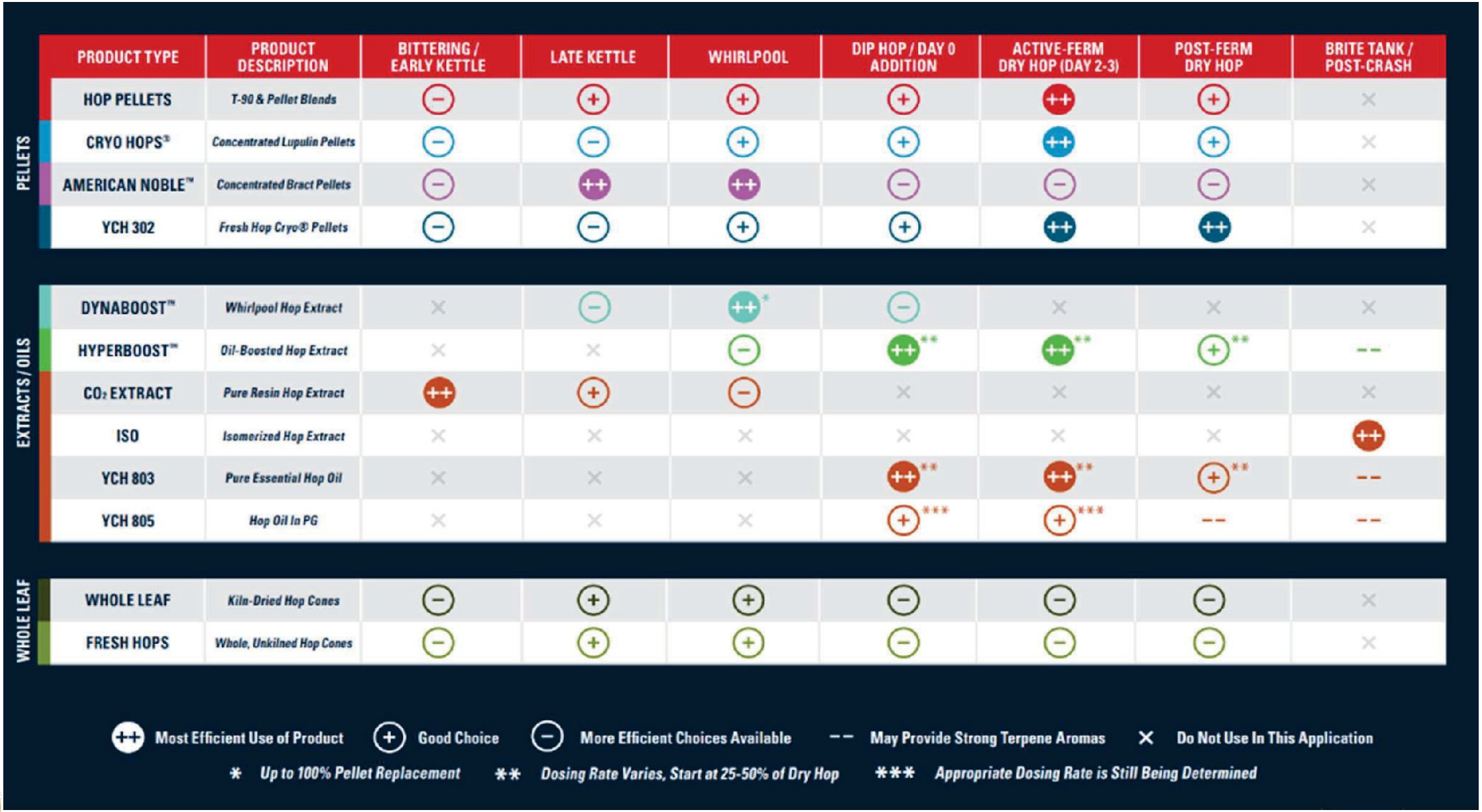
- Swap Classic Varieties for Modern
- Switch bittering addition(s) to CO2 Extract or Low Co-Humulone Hops
  - Target APPX 50-60 IBU During the Boil
- Include new hop products
- Increase total WP & DH Amounts



Choosing Hops for Modern West Coast IPA

Common Hop Choices	Continued	Hot/ Cold Side Flowable Extract
Mosaic	Superdelic	YCH Hyperboost
Simcoe	Centennial	YCH Dynaboost
Citra	Motueka	Haas Incognito
Krush	El Dorado	Haas Flex
Strata	Cashmere	Haas Spectrum
Nelson Sauvin	Thora	Haas Prysma
Riwaka	Alora	Haas Euphorics
Nectaron	Erebus	Freestyle SubZero Hop Kief
CTZ	Luminosa	TNS HopBurst
Chinook	Audacia	Abstrax Quantum
Idaho 7	Galaxy	Hopsteiner HopFlow
YCH Cryo Fresh Hops	Dolcita	Hopsteiner Salvo

When/ Where Are Hop Formats Most Effective?



	PRODUCT TYPE	PRODUCT DESCRIPTION	BITTERING / EARLY KETTLE	LATE KETTLE	WHIRLPOOL	DIP HOP / DAY 0 ADDITION	ACTIVE-FERM DRY HOP (DAY 2-3)	POST-FERM DRY HOP	BRITE TANK / POST-CRASH
PELLETS	HOP PELLETS	*T-90 & Pellet Blends*	−	+	+	+	++	+	×
	CRYO HOPS®	*Concentrated Lupulin Pellets*	−	−	+	+	++	+	×
	AMERICAN NOBLE™	*Concentrated Bract Pellets*	−	++	++	−	−	−	×
	YCH 302	*Fresh Hop Cryo® Pellets*	−	−	+	+	++	++	×
EXTRACTS / OILS	DYNABOOST™	*Whirlpool Hop Extract*	×	−	++*	−	×	×	×
	HYPERBOOST™	*Oil-Boosted Hop Extract*	×	×	−	++**	++**	+**	−−
	CO_2 EXTRACT	*Pure Resin Hop Extract*	++	+	−	×	×	×	×
	ISO	*Isomerized Hop Extract*	×	×	×	×	×	×	++
	YCH 803	*Pure Essential Hop Oil*	×	×	×	++**	++**	+**	−−
	YCH 805	*Hop Oil In PG*	×	×	×	+***	+***	−−	−−
WHOLE LEAF	WHOLE LEAF	*Kiln-Dried Hop Cones*	−	+	+	−	−	−	×
	FRESH HOPS	*Whole, Unkilned Hop Cones*	−	+	+	−	−	−	×

++ Most Efficient Use of Product + Good Choice − More Efficient Choices Available −− May Provide Strong Terpene Aromas × Do Not Use In This Application

* Up to 100% Pellet Replacement ** Dosing Rate Varies, Start at 25-50% of Dry Hop *** Appropriate Dosing Rate is Still Being Determined

Source: Yakima Chief Hops

Yeast Considerations

Ale- Cal Ale (Chico)

- 78-82% Attenuation
- Low Ester
- Showcases hops as they are, not a big biotransformation strain
- Great for showcasing selected lots
- Fast, reliable fermentations.
- Requires a bit of extra effort to clarify

Lager- 34/70 (*Weihenstephan*)

- 80-84% Attenuation
- Low Ester
- Presents opportunity for releasing bound thiols.
- Can extend hop flavor/ aroma character in package
- Great for elevating hops that need a push into the tropical/ fruity zone. Can distract from pure/ selected hop flavor and aroma.

Hot and Cold Side Process Considerations

Section 6

Hot Side

Mash/Lauter

- Single Infusion: 148F 40-60 Min OR
- Step Infusion: 148F 30 Min; 156F 10 Min; 170F Mash Out.
- 1.6 qt/lb Liquor to Grist Ratio
- **Mash pH 5.3**

Boil

- 60 Min Boil
- Split additions of CO2 Extract throughout boil

Whirlpool

- Cool to below 180F
- **Target 1.0#/BBL or greater total hop addition**
- **Reduce knockout pH to 5.0-5.1**

Cold Side

Knockout

- Target 8-10 ppm of DO for Cal Ale
- Add Enzymes
- Add Cold Site Flowable Extract or a Dry Hop
- Perform a “Dip Hop” by knocking out warm wort (APPX 175F) and incorporating the hop extract or hop pellets prior to knocking out the remaining wort 30-60 minutes later.

Fermentation

- Start Fermentation Temp on the strains low end.
- After Day 2, raise the temp 2F.
- After Day 4, raise the temp 2-4F for a Diacetyl Rest
- Perform a VDK test to ensure Diacetyl has been reduced.
- Harvest or dump yeast
- **Adjust the pH before dry hopping to APPX 4.3**

Cold Side Continued

Dry Hop

- Dry hop in 2 stages to maximize hop expression and get the best out of various varieties and products. **Target 3.0+ #/BBL Total**
- Total contact time should be 2-3 days max on the hops. Dump the cone promptly.
- Add ALDC at Dry Hop to help manage diacetyl increase
- Rouse hops with CO2 as necessary

Conditioning & Carbonation

- Post Dry Hop- Crash tank to 33F, hold 48 hours, drop trub each day 1-2 times.
- Dose Biofine (1/2 or full amount)
- Purge BBT
- Centrifuge if desired
- Transfer to BBT and hold for 24 hours. (Optional ½ dose Biofine)
- **Carbonate between 2.6-2.8 vol.** CO2- will depend on final gravity and BU's

Putting it Together- Hot Side

Modern West Coast IPA Recipe Card

Target Specs				
OG	FG	ABV	IBU	SRM
14.7oP	1.7oP	7.00%	68.0	3.3

Grain Bill			
Product	Color	CGR Al Extract	% Of Extract
Rahr To Thee! Pilsner	1.6 SRM	79.0%	87.0%
Rahr Extra Pale White Wheat	2.3 SRM	83.0%	8.0%
Dextrose (In Boil)	0.0 SRM	100.0%	5.0%

Boil Additions				
Addition Time	Product	Format	Utilization %	Target IBU/Addition Volume
60 Min	Simcoe	CO2 Hop Extract	35.00%	28.0
15 Min	Simcoe	CO2 Hop Extract	35.00%	32.0
10 Min	Whirlfloc-G	Granular		4.0g/BBL
10 Min	Zinc	Granular		0.1g/ BBL
10 Min	Dextrose	Granular		See Grain Bill
Whirlpool 175F	FG Phosporic Acid	Liquid		TBD to hit 5.0-5.1 pH
Whirlpool 175F	Mosaic	T-90		0.5#/BBL
Whirlpool 175F	Simcoe	Cryo		0.25#/BBL
Whirlpool 175F	Mosaic	Dynaboost		22.7g/ BBL (1:10 sub for 0.5#/BBL T-90)

Putting it Together- Cold Side

Yeast				
Strain	Knockout DO	Knockout Temp	Fermentation Temp	Diacetyl Rest Temp
Fermentis SafAle US-05	8-10 ppm	66F	66F	70F

Fermentation Additions				
Product	Addition Time	Addition Duration	Addition Temp	Amount
Brewer's Clarex	Yeast Pitch		66F	5.0 mL/ BBL
ALDC	Yeast Pitch		66F	3.5g/ BBL
YCH Mosaic Hyperboost	Yeast Pitch		66F	6.25g/ BBL
Mosaic Cryo	DH 1- Day 5		68 F	0.5#/ BBL
Simcoe Cryo	DH 1- Day 5		68 F	0.5#/ BBL
Freestyle Nelson Sauvin Sub Zero Hop Kief	DH 1- Day 5		68F	17.3 mL/ BBL
ALDC	DH 2- Terminal		70F	2.0g/ BBL
Mosaic T-90	DH 2- Terminal	48 Hours	70F	2.0#/ BBL
Nelson Sauvin T-90	DH 2- Terminal	48 Hours	70F	0.5#/ BBL
FG Phosporic Acid	DH 2- Terminal		70 F	TBD to hit 4.45 Final pH
Biofine	At Crash	48 Hours	70F	75mL/ BBL

Conditioning				
Crash Temp	Conditioning Time	Centrifuge	Biofine	Target Carb Level
32F	48 Hours	If Hazy	Yes	2.74 vol/CO2

Additional Notes			
Target Water Profile	Mash Temp	Mash Time	Target Knockout pH/ Final pH
3:1 Sulfate:Chloride (100-200ppm Total Calcium)	148F: 170F	30 min: Mash Out	5.0-5.1/ 4.4-4.5

Key Takeaways

- **Attenuation defines modern West Coast IPA.**
- **Anticipate & Embrace Hop Creep. Trust the Process.**
- **Hops are the star of the show, malt and adjuncts set a blank canvas.**
- **Process execution matters as much as recipe design.**
- **Modern West Coast IPA is a refinement of the classic style, not a replacement for it.**

Thank you Zero Gravity!- Collab Modern WCIPA

OG: 14.7oP
FG: 1.1oP
ABV: 7.3%
IBU: 60.0
SRM: 3.3

Grain Bill

- Pilsner
- Extra Pale Wheat
- Dextrose

Hops

- Citra T-90, Cryo, Dynaboost
- Motueka T-90, TNS Hopburst Oil
- Simcoe T-90
- CTZ C02 Extract





Works Cited

Brewers Association. *Great American Beer Festival (GABF) Competition Resources and Medal Results.* https://www.greatamericanbeerfestival.com

Craft Beer & Brewing. Video course: Defeat the hop creep with Russian River's Vinnie Cilurzo. Cilurzo, V. (2022, March 23). https://www.beerandbrewing.com/video-course-defeat-the-hop-creep-with-russian-rivers-vinnie-cilurzo

Firestone Walker Brewing Company. *Union Jack IPA Product Information and Technical Specifications.* Firestone Walker Brewing Company. https://www.firestonewalker.com

Master Brewers Association of the Americas (MBAA). *Award-Winning Modern West Coast IPA Production Survey.* Compiled and analyzed by CJ Penzone, 2026.

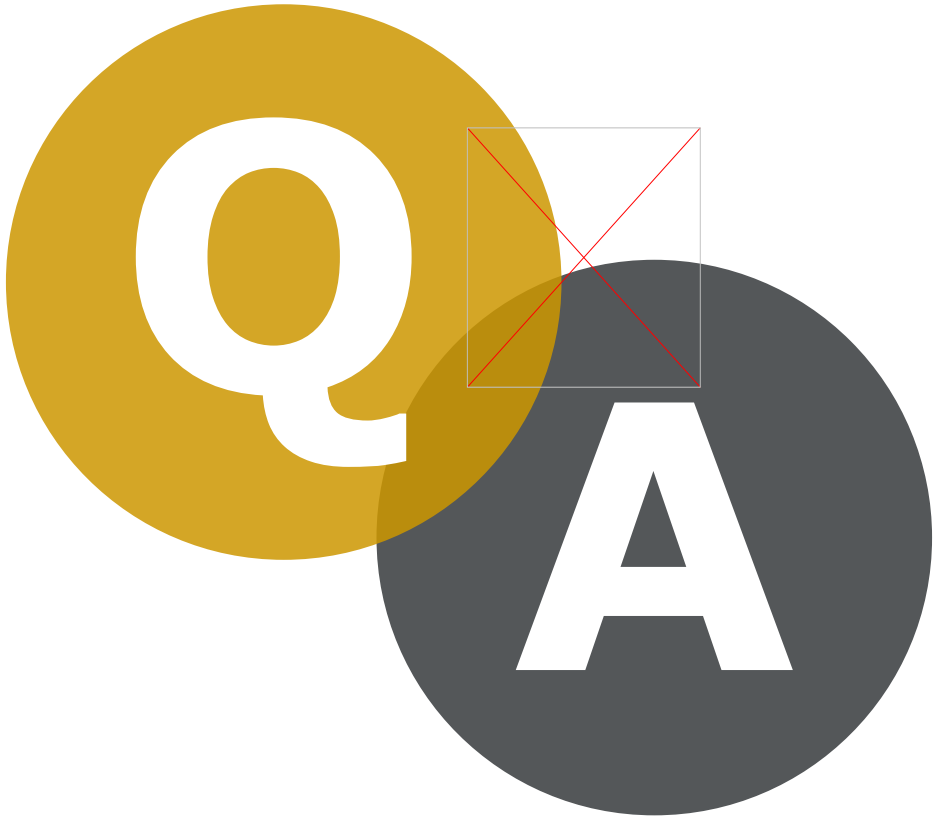
Steele, Mitch. *IPA: Brewing Techniques, Recipes and the Evolution of India Pale Ale.* Brewers Publications, 2012.

World Beer Cup. *2026 Beer Style Guidelines: Category 114, West Coast-Style India Pale Ale.* Brewers Association. https://www.worldbeercup.org

World Beer Cup. *Beer Style Guidelines: Category 112, Classic India Pale Ale (American-Style India Pale Ale).* Brewers Association. https://www.worldbeercup.org

Yakima Chief Hops (YCH). *Hop Product and Brewing Resources.* Yakima Chief Hops. https://www.yakimachief.com

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Thank You!

CJ PENZONE
Regional Sales Manager- New England

Email: cpenzone@rahrbsg.com
Phone: (484) 523-0272
Office: Remote; Kutztown, PA
RahrBSG.com
800 1st Ave W, Shakopee, MN 55379