

UPDATED: Forecasting Your Mailbox Milk Price *An Application to Forecast Mailbox Prices for Individual Dairies*

Many variables factor into determining the mailbox price for individual dairies. Most producer milk prices are based off of announced, standardized prices, such as the Federal Milk Marketing Order Class III price. However, variables unique to each dairy impact the final milk price for individual dairies. These variables include, but are not limited to, butterfat and protein percentages, premiums for quality and volume, and hauling. Therefore, no dairy is paid exactly the Class III price, which is based on milk testing 3.5% butterfat, 2.99% true protein and 5.69% other solids. Given that Jersey milk is significantly higher in butterfat and protein than the Class III standard, mailbox prices for Jersey milk are also substantially higher than the announced Class III price. However, over time, a predictable relationship exists between the Class III price and each individual dairy's mailbox milk price.

National All-Jersey Inc. (NAJ) partially funded a project led by Dr. Brian Gould of the University of Wisconsin-Madison to develop an application to forecast mailbox prices for individual dairies for a 12 month period. **The web program became available last month and is available at (<https://dairy.aae.wisc.edu/>).** **This is an updated version of the previous Excel platform.** Once on the website click the “Dairy Marketing Tools” tab in the upper right corner. Then scroll down and select the “Mailbox Milk Price Forecaster”. You will then need to complete the registration to get yourself into the system.

The price forecast uses three processes. First, it compares the dairy's historical mailbox prices to historical Class III and IV prices to determine the relationship between the two prices, known as basis. Second, the analysis uses previous monthly butterfat and protein tests to project monthly component levels into the future. Finally, the analysis accesses current Class III and IV futures prices and combines them with the dairy's historical basis and projected components to forecast a mailbox price for the following 12 months.

Getting Started

Before starting the forecast process, three pieces of monthly data are needed from your dairy: (1) mailbox milk prices, (2) butterfat tests and (3) protein tests. In order to work well, the model requires the four most recent years of monthly data. Having data from additional years adds to the reliability of the forecast. Ten to fifteen years-worth of data is ideal.

Using the Mailbox Predictor

You will enter your monthly mailbox prices first. Then select **Save** and then select **Fat%**.

Mailbox Prices

Enter mailbox price as decimal
Ex. Enter \$12.35 as '12.35' (do not type quotes)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												
2012												
2013												
2014	32.24	34.06	33.62	31.85	28.94	28.61	29.40	30.94	34.02	34.34	31.85	27.86
2015	24.17	22.82	21.25	20.12	19.92	19.64	20.08	21.04	24.25	24.97	27.28	25.98
2016	23.40	23.55	21.36	19.20	18.15	17.89	19.87	21.72	22.38	21.54	22.37	24.16
2017	24.42	23.44	22.71	20.69	20.55	21.42	22.74	23.40	23.79			

Mailbox Price
Fat %
Protein %
Save

The **Butterfat %** screen will open. Enter your butterfat tests into the empty cells for the appropriate month and year. When completed, select **Save**.

Then select **Protein %**. A new screen will be displayed with **Protein %** at the top. Enter your information, then select **Save**.

Butterfat %

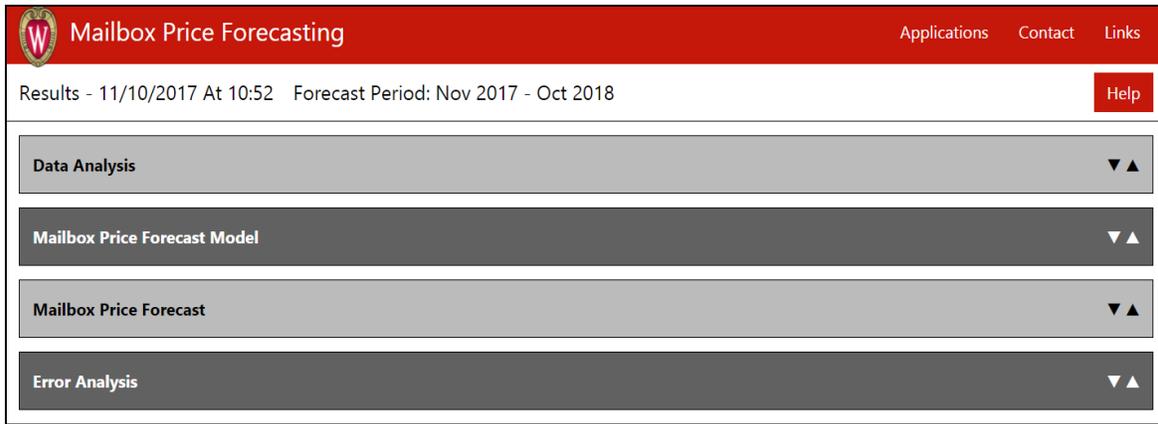
Enter component butterfat % as decimal
Ex. Enter 3.50% as '3.50' (do not type quotes)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2004												
2005												
2006												
2007												
2008												
2009												
2010												
2011												
2012												
2013												
2014	5.29	5.31	5.13	4.81	4.56	4.63	4.74	4.79	4.94	5.09	5.25	5.16
2015	5.26	5.32	5.08	4.84	4.59	4.60	4.59	4.70	5.02	5.31	5.41	5.50
2016	5.52	5.49	5.34	4.93	4.74	4.49	4.62	4.87	5.11	5.29	5.30	5.40
2017	5.38	5.34	5.15	4.96	4.82	4.63	4.71	4.86	5.19			

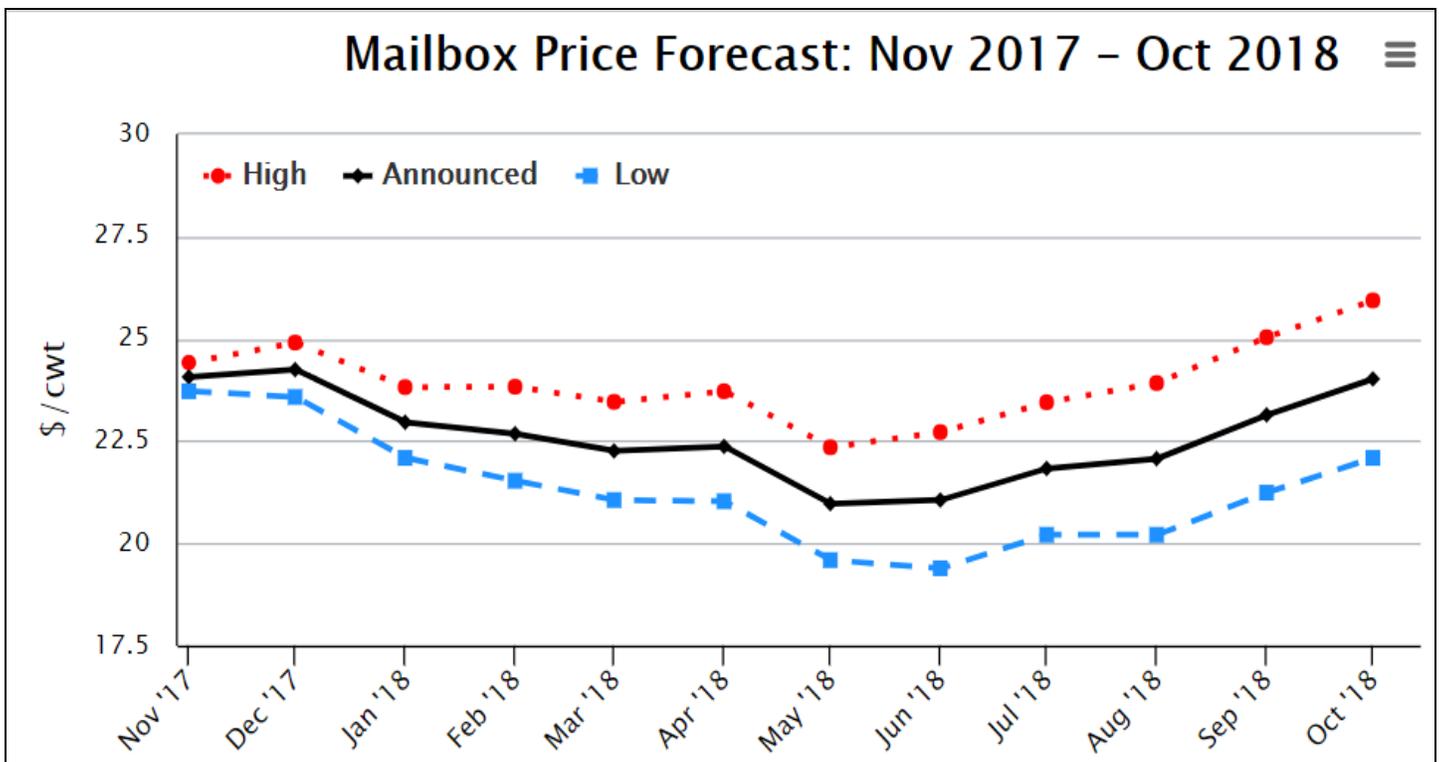
Mailbox Price
Fat %
Protein %
Save

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The next step is to select your **Forecast Options** to the right of the data entry area. The **Data Range Start** and **End** parameters must be set within the timespan that data is entered for. You can then select if you want to use the component data that you entered. The component options allow you to use last year's values, last year's average, or custom values. Then select the **Forecast** button. The screen below will then be presented.



Your mailbox price forecast for the next 12 months will be displayed under the **Mailbox Price Forecast** tab. You will see the forecast in a graph and table format, along with projected upper and lower ranges.



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Forecast Values

Forecast Month	Forecast Price	Class III Future Price	Class IV Future Price
Nov	\$24.07	\$16.54	\$13.83
Dec	\$24.25	\$15.69	\$13.91
Jan	\$22.96	\$15.38	\$13.90
Feb	\$22.68	\$15.29	\$14.04
Mar	\$22.26	\$15.17	\$14.23
Apr	\$22.37	\$15.25	\$14.45
May	\$20.97	\$15.38	\$14.66
Jun	\$21.06	\$15.67	\$14.87
Jul	\$21.83	\$15.96	\$15.14
Aug	\$22.07	\$16.09	\$15.30
Sept	\$23.14	\$16.19	\$15.51
Oct	\$24.02	\$16.17	\$15.73

Statistical analysis of mailbox price forecast for Nov 2017 - Oct 2018

	Average	Standard Dev.	Max	Min
Mailbox Price	\$22.64	\$1.06	\$24.25	\$20.97
Fat %	5.10%	0.30%	5.40%	4.60%
Protein %	3.70%	0.10%	4.00%	3.50%

Other Tabs

The **Data Analysis** tab looks at the data that you entered, providing a graph of your previous mailbox prices. The **Mailbox Price Forecast Model** tab goes over the mathematical model for the mailbox price forecasts and shows the forecast values. The **Error Analysis** tab looks at the statistical error in the forecast model.

You may want to bookmark the link to the program and record your login information; doing this will allow you to update the information on a regular basis when you obtain new mailbox prices or when you want to re-estimate your mailbox forecast to reflect current market conditions.

Please direct questions or concerns about this tool to NAJ at naj@usjersey.com or Dr. Gould at bwgould@wisc.edu.

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NAJ Milk & Component Outlook - September 2017 Jersey Price Comparisons

<u>SEPT '17 STATISTICAL BLEND PRICE</u>		<u>SEPT '17 MONTHLY MILK VOLUME</u> (Million #)		<u>SEPT '17 JERSEY REGULATED BLEND PRICE</u>	
Northeast (Boston)	\$17.89	Northeast (Boston)	2,180	Northeast (Boston)	\$22.13
Appalachian (Charlotte)	\$19.06	Appalachian (Charlotte)	473	Appalachian (Charlotte)	\$22.53
Southeast (Atlanta)	\$19.61	Southeast (Atlanta)	408	Southeast (Atlanta)	\$23.10
Florida (Tampa)	\$21.14	Florida (Tampa)	203	Florida (Tampa)	\$24.71
Mideast (Cleveland)	\$17.00	Mideast (Cleveland)	1,616	Mideast (Cleveland)	\$21.11
Upper Midwest (Chicago)	\$16.54	Upper Midwest (Chicago)	3,190	Upper Midwest (Chicago)	\$20.82
Central (Kansas City)	\$16.72	Central (Kansas City)	1,419	Central (Kansas City)	\$20.91
Southwest (Dallas)	\$17.58	Southwest (Dallas)	1,194	Southwest (Dallas)	\$21.55
Arizona (Phoenix)	\$16.89	Arizona (Phoenix)	397	Arizona (Phoenix)	\$20.66
Pacific Northwest (Seattle)	\$16.59	Pacific Northwest (Seattle)	717	Pacific Northwest (Seattle)	\$20.01
ALL FMMO MARKET AVERAGE	\$17.90	ALL FMMO MARKET TOTAL	11,798	ALL FMMO MARKET AVERAGE	\$21.75
California 4b (Cheese Milk)	\$14.88			California 4b (Cheese Milk)	\$19.22
California Overbase	\$15.25			California Overbase	\$19.66

Prices reflect Federal Order minimum blend prices for city shown.

Total Grade A milk volume sold under FMMO during month.

Prices reflect FMMO minimum prices at Jersey component values.

<u>SEPT '17 JERSEY BLEND WITH ESTIMATED PROTEIN OR CHEESE YIELD PREMIUMS</u>		<u>SEPT '17 DOLLAR DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE</u>		<u>SEPT '17 PERCENT DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE</u>	
Northeast (Boston)	\$22.35	Northeast (Boston)	\$4.46	Northeast (Boston)	25.0%
Appalachian (Charlotte) (includes protein prem.)	\$22.87	Appalachian (Charlotte)	\$3.81	Appalachian (Charlotte)	20.0%
Southeast (Atlanta)	\$23.10	Southeast (Atlanta)	\$3.49	Southeast (Atlanta)	17.8%
Florida (Tampa)	\$24.71	Florida (Tampa)	\$3.57	Florida (Tampa)	16.9%
Mideast (Cleveland) (includes protein premium)	\$21.67	Mideast (Cleveland)	\$4.67	Mideast (Cleveland)	27.5%
Upper Midwest (Chicago) (includes cy premium)	\$21.05	Upper Midwest (Chicago)	\$4.51	Upper Midwest (Chicago)	27.3%
Central (Kansas City)	\$20.91	Central (Kansas City)	\$4.19	Central (Kansas City)	25.1%
Southwest (Dallas)	\$21.55	Southwest (Dallas)	\$3.97	Southwest (Dallas)	22.6%
Arizona (Phoenix) (includes protein)	\$20.98	Arizona (Phoenix)	\$4.09	Arizona (Phoenix)	24.2%
Pacific Northwest (Seattle)	\$20.01	Pacific Northwest (Seattle)	\$3.42	Pacific Northwest (Seattle)	20.6%
ALL FMMO MARKET AVERAGE	\$21.92	ALL FMMO MARKET AVERAGE	\$4.02	ALL FMMO MARKET AVERAGE	22.7%
California 4b (Includes CY Premium)	\$20.47	California 4b (Includes CY Premium)	\$5.59	California 4b (Includes CY Premium)	37.6%
California Overbase	\$20.92	California Overbase	\$5.67	California Overbase	37.2%

Includes a protein premium of \$0.05 for every 0.01% increase in protein over the market average.

Prices reflect difference between Jersey price with premiums, and the statistical blend price.

Percent difference in Jersey price with premiums, over the statistical blend price.

<u>ESTIMATED JERSEY MILK COMPOSITION</u>	<u>Sep-17</u>	<u>REGULATED MILK PRICES</u>	<u>Sep-17</u>	<u>AVERAGE JERSEY PRICE ADJUSTMENT PER CWT:</u>	<u>Sep-17</u>
Butterfat	4.92	FMMO Milkfat	\$ 2.8559	FMMO Milkfat Adjustment	\$3.24
TRUE Protein	3.75	FMMO True Protein	\$ 1.6988	FMMO True Protein Adjustment	\$1.02
Other Solids	5.73	FMMO Other Solids	\$ 0.2241	FMMO Other Solids Adjustment	(\$0.00)
Solids Not Fat (SNF)	9.48	CA 4b (Cheese Milk) Milkfat	\$ 2.7168	CA 4b (Cheese Milk) Milkfat	\$3.86
Cheese Yield (90% Fat Recovery, 38% Moisture)	12.97	CA 4b (Cheese Milk) SNF	\$ 0.6175	CA 4b (Cheese Milk) SNF	\$0.49
		CA Overbase Milkfat	\$ 2.7540	CA Overbase Milkfat	\$3.91
CME Block Cheese Price	\$ 1.64	CA Overbase SNF	\$ 0.6450	CA Overbase SNF	\$0.50

NAJ Milk & Component Outlook - 2017 Prices through September

2017 AVERAGE STATISTICAL BLEND PRICE FOR EACH FEDERAL ORDER		2017 MILK VOLUME (Million #)		2017 AVERAGE JERSEY REGULATED BLEND PRICE	
Northeast (Boston)	\$17.54	Northeast (Boston)	20,713	Northeast (Boston)	\$21.35
Appalachian (Charlotte)	\$19.05	Appalachian (Charlotte)	4,308	Appalachian (Charlotte)	\$22.34
Southeast (Atlanta)	\$19.29	Southeast (Atlanta)	4,152	Southeast (Atlanta)	\$22.65
Florida (Tampa)	\$20.54	Florida (Tampa)	1,939	Florida (Tampa)	\$24.20
Mideast (Cleveland)	\$16.67	Mideast (Cleveland)	15,560	Mideast (Cleveland)	\$20.44
Upper Midwest (Chicago)	\$16.28	Upper Midwest (Chicago)	25,438	Upper Midwest (Chicago)	\$20.14
Central (Kansas City)	\$16.45	Central (Kansas City)	12,508	Central (Kansas City)	\$20.25
Southwest (Dallas)	\$17.29	Southwest (Dallas)	10,334	Southwest (Dallas)	\$20.84
Arizona (Phoenix)	\$16.53	Arizona (Phoenix)	3,870	Arizona (Phoenix)	\$19.91
Pacific Northwest (Seattle)	\$16.35	Pacific Northwest (Seattle)	5,860	Pacific Northwest (Seattle)	\$19.55
ALL FMMO MARKET AVERAGE	\$17.60	ALL FMMO MARKET TOTAL	104,681	ALL FMMO MARKET AVERAGE	\$21.17
California 4b (Cheese Milk)	\$15.24			California 4b (Cheese Milk)	\$19.39
California Overbase	\$15.35			California Overbase	\$19.49

Prices reflect Federal Order minimum blend prices for city shown.

Total Grade A milk volume sold under FMMO.

Prices reflect FMMO minimum prices at Jersey component values.

2017 AVERAGE JERSEY BLEND WITH ESTIMATED PROTEIN OR CHEESE YIELD PREMIUMS		2017 AVERAGE DOLLAR DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE		2017 AVERAGE PERCENT DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE	
Northeast (Boston)	\$21.57	Northeast (Boston)	\$4.02	Northeast (Boston)	23.0%
Appalachian (Charlotte) (includes protein prem.)	\$22.67	Appalachian (Charlotte)	\$3.36	Appalachian (Charlotte)	17.5%
Southeast (Atlanta)	\$22.65	Southeast (Atlanta)	\$3.12	Southeast (Atlanta)	16.0%
Florida (Tampa)	\$24.20	Florida (Tampa)	\$3.23	Florida (Tampa)	15.4%
Mideast (Cleveland) (includes protein premium)	\$21.00	Mideast (Cleveland)	\$4.31	Mideast (Cleveland)	25.9%
Upper Midwest (Chicago) (includes cy premium)	\$20.36	Upper Midwest (Chicago)	\$4.06	Upper Midwest (Chicago)	24.9%
Central (Kansas City)	\$20.25	Central (Kansas City)	\$3.79	Central (Kansas City)	23.0%
Southwest (Dallas)	\$20.84	Southwest (Dallas)	\$3.57	Southwest (Dallas)	20.7%
Arizona (Phoenix) (includes protein)	\$20.23	Arizona (Phoenix)	\$3.68	Arizona (Phoenix)	22.3%
Pacific Northwest (Seattle)	\$19.55	Pacific Northwest (Seattle)	\$3.22	Pacific Northwest (Seattle)	19.8%
ALL FMMO MARKET AVERAGE	\$21.33	ALL FMMO MARKET AVERAGE	\$3.64	ALL FMMO MARKET AVERAGE	20.8%
California 4b (Includes CY Premium)	\$20.63	California 4b (Includes CY Premium)	\$5.40	California 4b (Includes CY Premium)	35.4%
California Overbase	\$20.73	California Overbase	\$5.39	California Overbase	35.1%

Includes a protein premium of \$0.05 for every 0.01% increase in protein over the market average.

Prices reflect difference between Jersey price with premiums, and the statistical blend price.

Percent difference in Jersey price with premiums, over the statistical blend price.

ESTIMATED JERSEY MILK COMPOSITION	2017	REGULATED MILK PRICES	2017	AVERAGE JERSEY PRICE ADJUSTMENT PER CWT:	2017
Butterfat	4.90	FMMO Milkfat	\$2.6286	FMMO Milkfat Adjustment	\$2.97
TRUE Protein	3.74	FMMO True Protein	\$1.7701	FMMO True Protein Adjustment	\$1.06
Other Solids	5.73	FMMO Other Solids	\$0.2851	FMMO Other Solids Adjustment	(\$0.01)
Solids Not Fat (SNF)	9.47	CA 4b (Cheese Milk) Milkfat	\$2.5692	CA 4b (Cheese Milk) Milkfat	\$3.61
Cheese Yield (90% Fat Recovery, 38% Moisture)	12.93	CA 4b (Cheese Milk) SNF	\$0.7176	CA 4b (Cheese Milk) SNF	\$0.56
		CA Overbase Milkfat	\$2.5520	CA Overbase Milkfat	\$3.58
CME Block Cheese Price	\$1.61	CA Overbase SNF	\$0.7372	CA Overbase SNF	\$0.56