Shellfish Producers & Nutrient Credit Trading Markets

Analysis of Economic Feasibility

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Outline

Supply Side – What we've learned from our shellfish producers

Demand Side – What we've learned from wastewater treatment plants

Credit Supply

Florida Shellfish Producers

Survey Details

- Sent to 359 clam and oyster producers
- 59 responses (Thank you if you responded!)

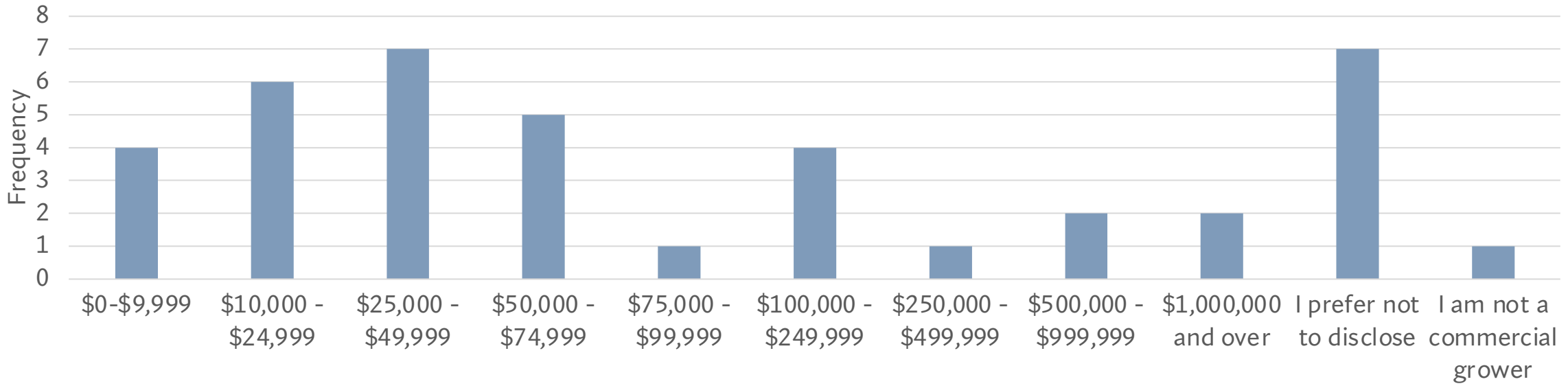
Who's in our survey?

	Mean	Median	Min	Max	# of responses
Number of leases	3.04	2.00	1.00	15.00	56
Number of acres	11.69	5.00	1.00	150.00	56
Years of experience	9.45	5.00	0.00	30.00	40
Quantity of clams produced	1.99 million	100,000	0.00	15.73 million	27
Quantity of oysters produced	209,200	51,000	0.00	1.9 million	30
Age	50.72	52	24	73	39
Male	75%				40
College degree or higher	50%				40

Current prices received

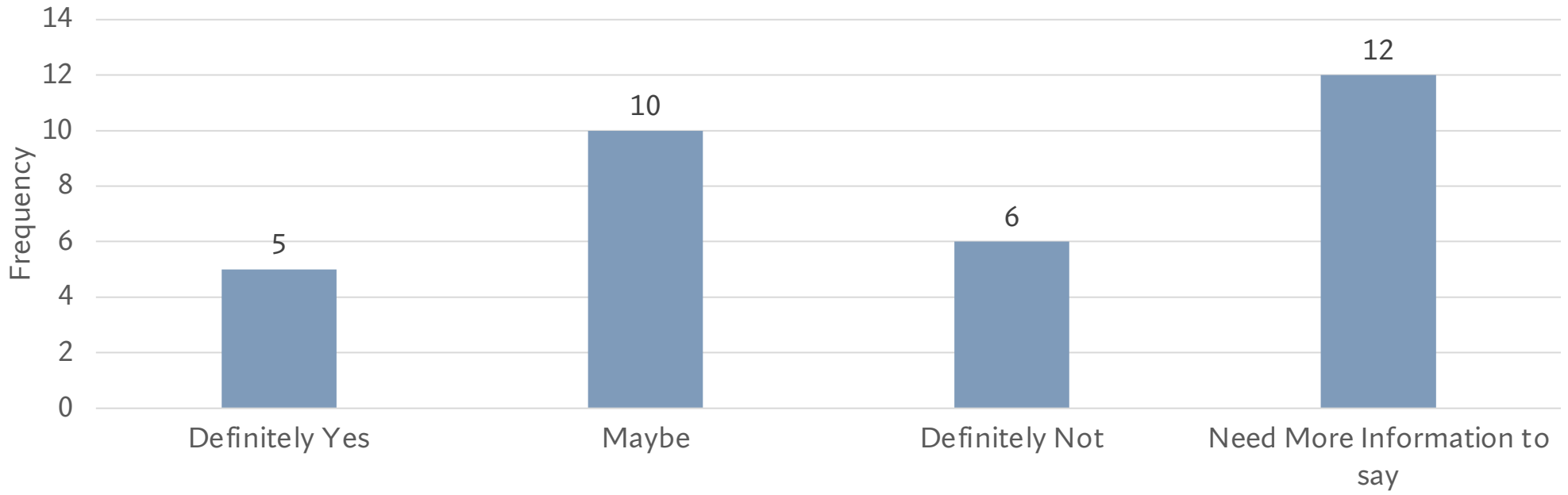
	Mean	Median	Min	Max	# of responses
Oysters	$0.66	$0.60	$0.55	$1.00	17
Pasta Clams	$1.36	$0.05	$0.00	$6.00	12
7/8” Clams	$2.21	$0.10	$0.00	$10.00	14
Littleneck Clams	$2.68	$0.14	$0.00	$14.00	14

Annual Gross Total Sales (40 responses)

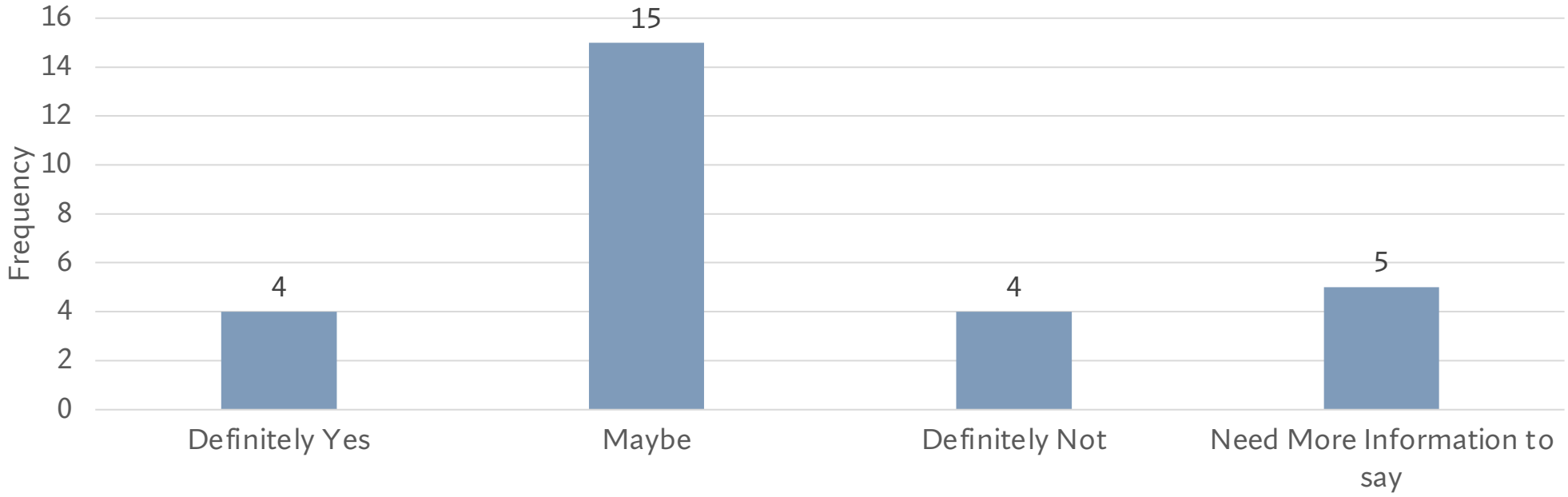


In each of the following kinds of locations, would you be willing to produce clams and/or oysters to remove nutrients from the water (if paid sufficiently high)?

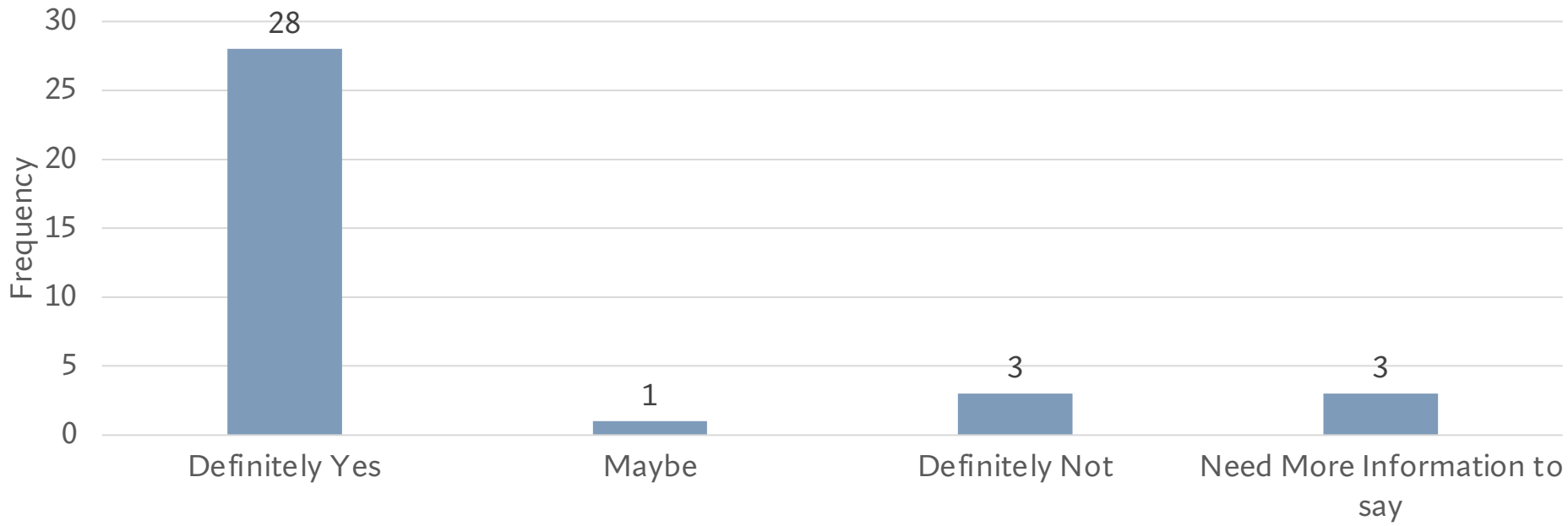
Where sale of product is not allowed:



Where environmental events may sometimes prevent sale of product:



Where sale of product is always allowed:



Credit Price Needed per Individual Clam or Oyster (median)

	Current Median Price	Sale Never Allowed	Sale Sometimes Allowed	Sale Always Allowed	# of responses
Oysters	$0.60	$0.78	$0.70	$0.64	14
Pasta Clams	$0.05	$0.11	$0.10	$0.10	8
7/8” Clams	$0.10	$0.13	$0.13	$0.13	10
Littleneck Clams	$0.14	$0.17	$0.17	$0.16	11

Credit Price Needed per kg N removed

	Sale Never Allowed	Sale Sometimes Allowed	Sale Always Allowed	# of responses
Oysters	$9,372.75	$8,411.44	$7,690.46	14
Pasta Clams	$1,530.53	$1,330.48	$1,330.48	8
7/8” Clams	$1,729.63	$1,729.63	$1,729.63	10
Littleneck Clams	$2,261.82	$2,261.82	$2,128.77	11

Demand for Credits

Wastewater Treatment Plants in Florida

Survey Details

50 wastewater treatment plants surveyed

20 out 55 facilities represented located in Basin Management Action Plan areas

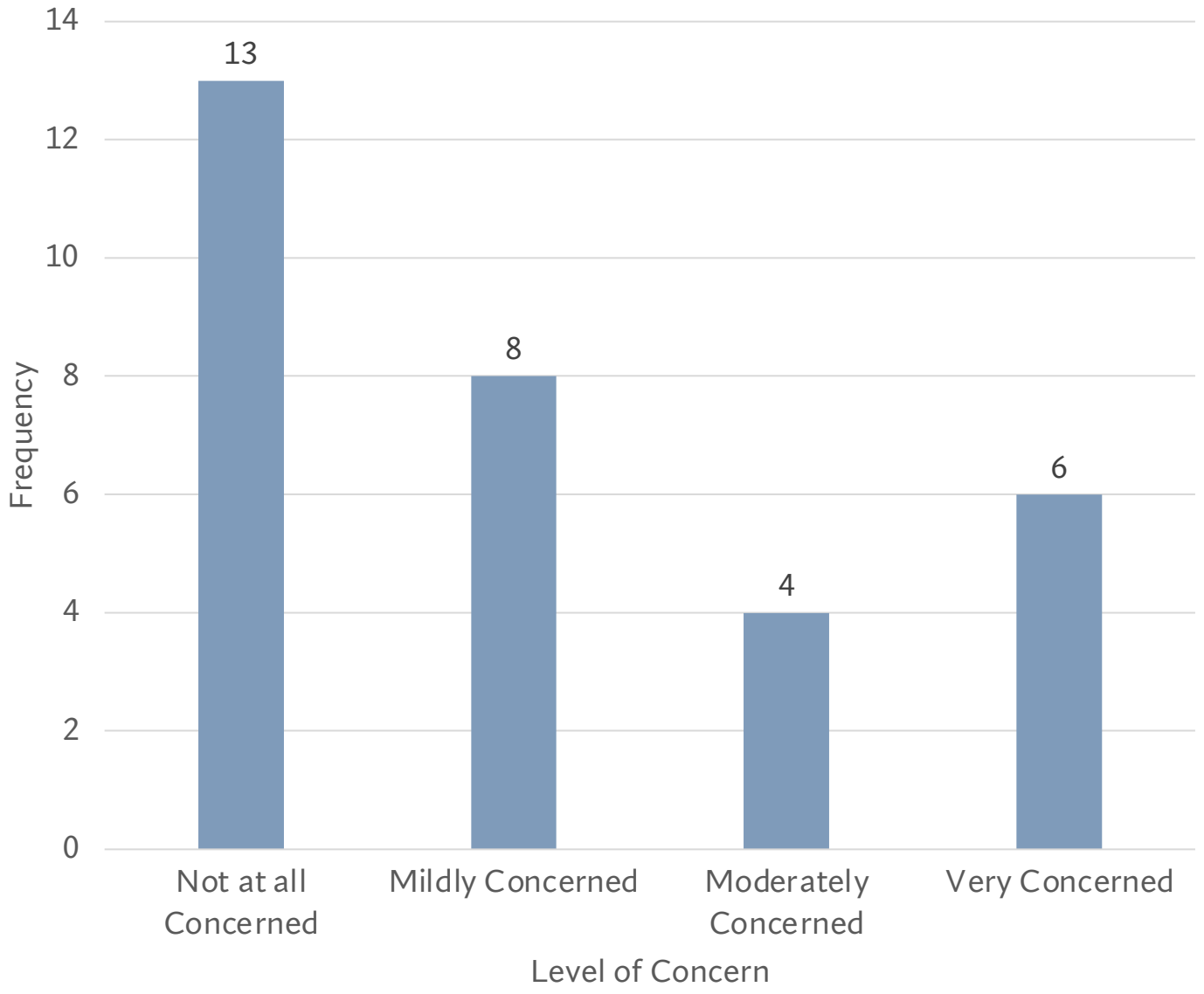
30 out of 55 operate under a National Pollution Discharge Elimination System (NPDES) Permit

Summary Statistics

	Mean	Median	Min	Max
Wastewater (MGD)	2.163	0.805	0.000	16.500
Predicted Change in 10 Years	+18.2%	+15%	0.0%	+75%
Predicted Change in 20 Years	+26.6%	+25%	-45.0%	+78%
Predicted Change in 30 Years	+29.7%	+35%	0.0%	+100%
Nitrogen (mg/L)	3.326	1.500	0.000	15.000
Phosphorous (mg/L)	0.980	0.285	0.000	5.000

Concern for meeting future regulatory requirements…

In 10 years


14
12
10
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4
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Frequency
13
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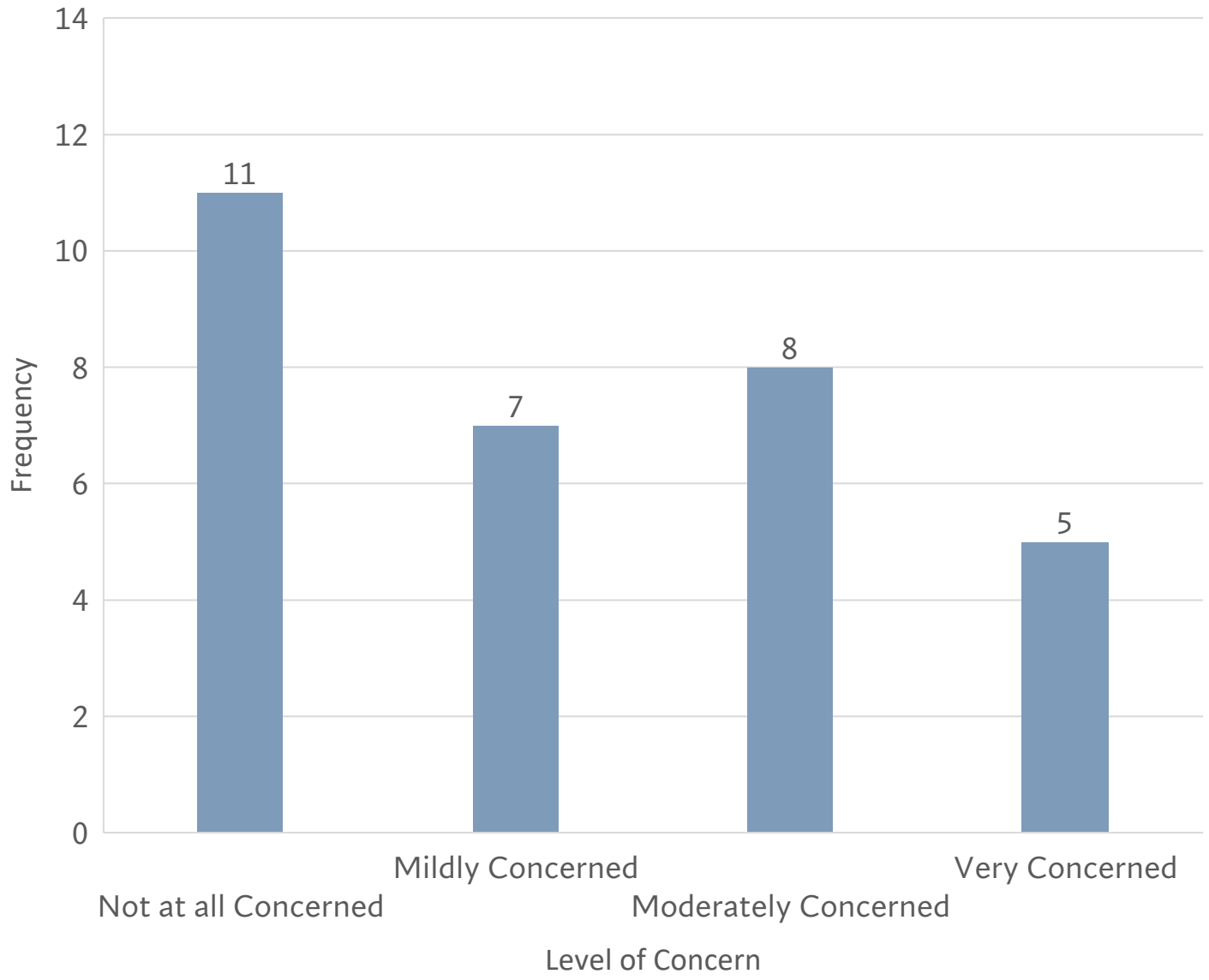
4
6
Not at all Concerned
Mildly Concerned
Moderately Concerned
Very Concerned
Level of Concern

In 20 years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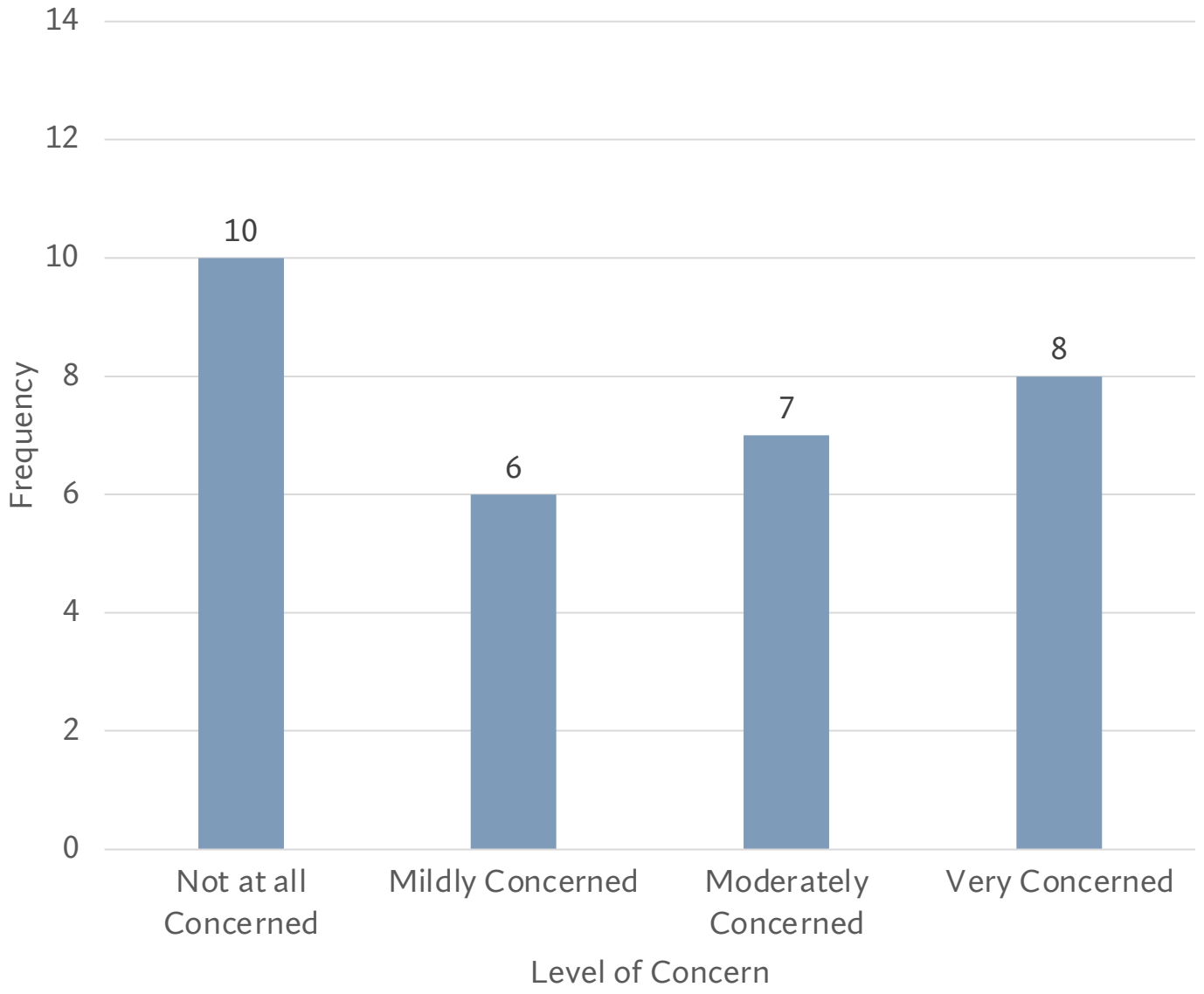
Not at all Concerned
Mildly Concerned
Moderately Concerned
Very Concerned
Level of Concern

In 30 years


14
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Frequency
10
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8
Not at all Concerned
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Very Concerned
Level of Concern

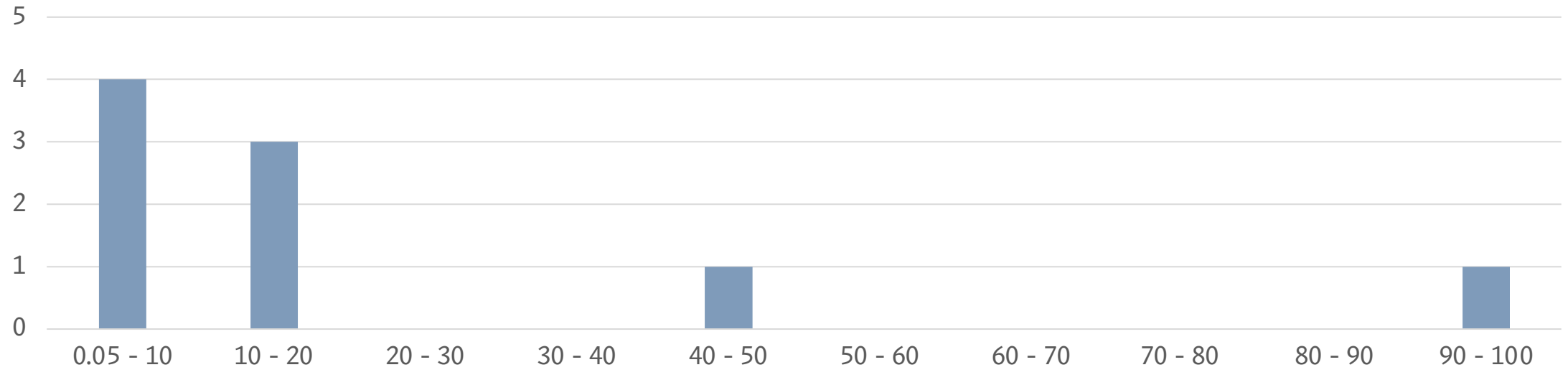
Willingness to Pay for Nitrogen Credits

Most common legislative concern: Requiring Advanced Water Treatment across the state of Florida

- Limits nitrogen emissions to 3 mg/L

Asked those plants with emissions > 3 mg/L their anticipated costs to meet this criterion.

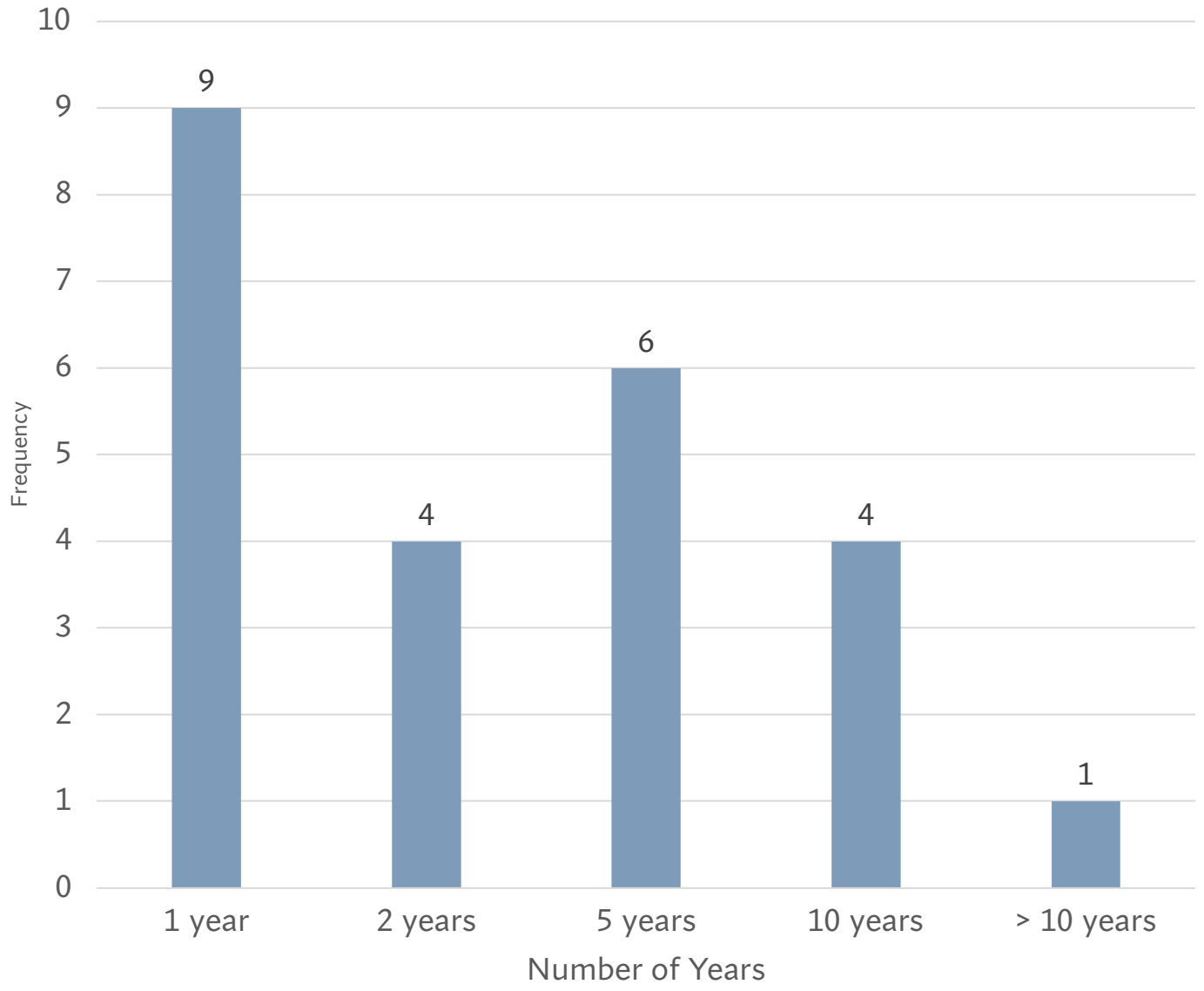
Cost to upgrade ($1,000,000s)



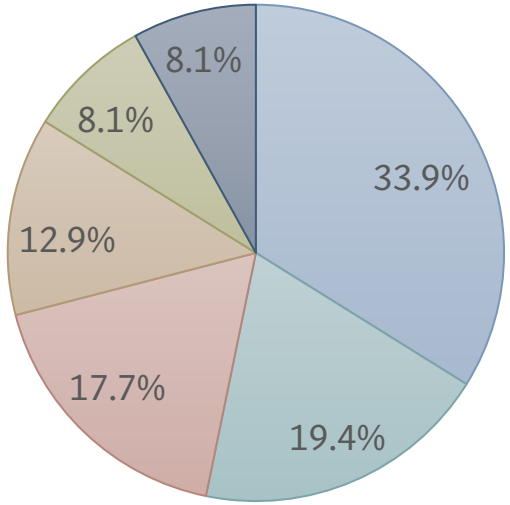
Willingness to Pay per kg N

	Mean	Median	Min	Max
$/kg	$4.16	$2.87	$0.91	$10.19

Shortest Credit Trading Time Commitment



Reasons to Not Participate in Nutrient Credit Trading



Conclusions

- Wastewater treatment plants are concerned about their ability to meet future regulatory requirements
- Demand for nutrient credits will likely increase
- Willingness to pay for credits is substantially lower than willingness to accept for credits
- Scale of nitrogen removal vs. nitrogen emissions is primary issue.

Thank you!
Questions?

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