2025 USA-CAN Standard Scoring Models

These appear on Page 2 of all ORC certificates issued in the USA and CAN and test certificates run in the ORC Sailor Services system. The ratings are also available for use by scoring software systems by downloading in RMS, JSON or CSV format from the ORC server at https://orc.org/race-managment/rms-files.

In general, the closer a race manager can describe the wind conditions of a race and choose an appropriate scoring option that matches that description, the more accurate and fair will be the ratings and race results. Greater discussion of this will be given in the **2025 ORC Race Management Guidebook, USA-CAN edition.**

1. Single Number rating options are used when conditions are too variable to select a specific wind range for scoring a race. These include 2 simple models: **Windward/Leeward** (50% VMG beat + 50% VMG run) and **All Purpose** (APH - an equal mix of all wind angles).

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	649.7	0.9235
All purpose	523.0	1.1473

The wind speed distribution for these single number ratings is as follows:

Wind speed (kts)	6	8	10	12	14	16	20	Avg
VMG upwind & downwind	5.0%	10.0%	20.0%	30.0%	20.0%	10.0%	5.0%	12.1 kts

2. When the wind speed during a race can be confined within a specified range, another scoring option to consider is the **Triple Number** for APH and Windward/Leeward courses. This is the wind speed distribution for **Low**, **Medium** and **High** wind ranges. Note the average for each:

Wind speed (kts)	4	6	8	10	12	14	16	20	Avg kts
Low	10.0%	45.0%	35.0%	10.0%					6.9
Medium			8.4%	33.3%	33.3%	25.0%			11.5
High						25.0%	37.5%	37.5%	17.0

3. When the race course has a wind direction that is mostly beating, reaching or running, especially for longer races, the **Predominant course models** should be considered. When wind speed is undefined then the AP mix of wind speeds shown above and is used with the following mix of wind angles for **Upwind, Reaching** and **Downwind** single number scoring options:

True Wind Angle	Upwind	Downwind	Reaching
VMG upwind	32.0%	8.0%	8.0%
52° reach	34.0%	11.0%	18.0%
90° reach	15.0%	15.0%	38.0%
135° reach	11.0%	34.0%	28.0%
VMG run	8.0%	32.0%	8.0%

4. When the wind speed during any course type can be further refined into a more specific range of wind speeds, the **5-Band system** should be considered to yield even more accurate results. This system identifies ratings for **Low, Low-Medium, Medium, Medium-High** and **High** ranges.

The formulations for each depend on the course type and are summarized here:

For **Windward-Leeward** courses with equal numbers of upwind and downwind legs, the 5-Band **Low, Low-Medium, Medium, Medium-High** and **High** range formulations are summarized here for 50% Upwind and 50% Downwind VMG wind angles:

Wind speed (kts)	4	6	8	10	12	14	16	20	24	Avg kts
Low	25.00%	50.00%	25.00%							6.0
Low/Medium		14.70%	35.30%	35.30%	14.70%					9.0
Medium			7.70%	19.20%	46.20%	19.20%	7.70%			12.0
Medium/High					7.70%	19.20%	55.80%	17.30%		16.0
High							17.30%	65.40%	17.30%	20.0

For **Windward-Leeward** courses with 3 upwind and 2 downwind legs, the 5-Band range formulations are the same as above for wind speed but the percentage of Upwind and Downwind VMG wind angles are calculated at 60% and 40%, respectively.

For **All Purpose** courses, wind angles are equally distributed across all wind angles from VMG upwind to VMG downwind, and wind speeds described in the **5-Band Low, Low-Medium, Medium, Medium-High and High** wind bands from 4 to 24 knots TWS.

Wind speed (kts)	4	6	8	10	12	14	16	20	24	Avg kts
Low	25.00%	50.00%	25.00%							6.0
Low/Medium		14.70%	35.30%	35.30%	14.70%					9.0
Medium			7.70%	19.20%	46.20%	19.20%	7.70%			12.0
Medium/High					7.70%	19.20%	55.80%	17.30%		16.0
High							17.30%	65.40%	17.30%	20.0

For **Predominant courses** when the wind speed cannot be defined, there are **Upwind**, **Reaching** and **Downwind** single number ratings summarized here. Note the average wind speed is **11.6 kts** for each:

Pred Upwind Single Number	2025		Average	11.6
Wind speed (kts)	8	12	16	TWA
VMG upwind	10.24%	14.72%	7.04%	32.0%
52° reach	10.88%	15.64%	7.48%	34.0%
90° reach	4.80%	6.90%	3.30%	15.0%
135° reach	3.52%	5.06%	2.42%	11.0%
VMG run	2.56%	3.68%	1.76%	8.0%
TWS	32.00%	46.00%	22.00%	100.0%

Pred Reaching Single Number	2025		Average	11.6
Wind speed (kts)	8	12	16	TWA
VMG upwind	2.56%	3.68%	1.76%	8.0%
52° reach	5.76%	8.28%	3.96%	18.0%
90° reach	12.16%	17.48%	8.36%	38.0%
135° reach	8.96%	12.88%	6.16%	28.0%
VMG run	2.56%	3.68%	1.76%	8.0%
TWS	32.00%	46.00%	22.00%	100.0%

Pred Downwind Single Number	2025		Average	11.6
Wind speed (kts)	8	12	16	TWA
VMG upwind	2.56%	3.68%	1.76%	8.0%
52° reach	3.52%	5.06%	2.42%	11.0%
90° reach	4.80%	6.90%	3.30%	15.0%
135° reach	10.88%	15.64%	7.48%	34.0%
VMG run	10.24%	14.72%	7.04%	32.0%
TWS	32.00%	46.00%	22.00%	100.0%

For **Predominant Upwind** courses when the wind speed can be estimated on the course, the **5-Band Low, Low-Medium, Medium, Medium-High** and **High** model rating options have wind angle percentages that vary for each. Note the average wind speed figure for each model:

Pred Upwind 5-Band Low	2025			Average	6.0
Wind speed (kts)	4	6	8	**TWA**	
VMG upwind	8.00%	16.00%	8.00%	32.0%	
52° reach	8.50%	17.00%	8.50%	34.0%	
90° reach	3.80%	7.50%	3.80%	15.1%	
135° reach	2.70%	5.50%	2.70%	10.9%	
VMG run	2.00%	4.00%	2.00%	8.0%	
TWS	25.00%	50.00%	25.00%	100.0%	

Pred Upwind 5-Band Low/Med	2025			Average	9.9
Wind speed (kts)	6	8	10	12	**TWA**
VMG upwind	4.70%	11.30%	11.30%	4.70%	32.0%
52° reach	5.00%	12.00%	12.00%	5.00%	34.0%
90° reach	2.21%	5.30%	5.30%	2.21%	15.0%
135° reach	1.62%	3.88%	3.88%	1.62%	11.0%
VMG run	1.18%	2.82%	2.82%	1.18%	8.0%
TWS	14.70%	35.30%	35.30%	14.70%	100.0%

Pred Upwind 5-Band Medium	2025				Average	12.8
Wind speed (kts)	8	10	12	14	16	**TWA**
VMG upwind	2.46%	6.14%	14.78%	6.14%	2.46%	29.5%
52° reach	2.62%	6.53%	15.71%	6.53%	2.62%	31.4%
90° reach	1.16%	2.88%	6.93%	2.88%	1.16%	13.8%
135° reach	0.85%	2.11%	5.08%	2.11%	0.85%	10.2%
VMG run	0.62%	1.54%	3.70%	1.54%	0.62%	7.4%
TWS	7.70%	19.20%	46.20%	19.20%	7.70%	100.0%

Pred Upwind 5-Band Med/High	2025			Average	16.0
Wind speed (kts)	12	14	16	20	**TWA**
VMG upwind	2.46%	6.14%	17.86%	5.54%	32.0%
52° reach	2.62%	6.53%	18.97%	5.88%	34.0%
90° reach	1.16%	2.88%	8.37%	2.60%	15.0%
135° reach	0.85%	2.11%	6.14%	1.90%	11.0%
VMG run	0.62%	1.54%	4.46%	1.38%	8.0%
TWS	7.70%	19.20%	55.80%	17.30%	100.0%

Pred Upwind 5-Band High	2025		Average	20.0
Wind speed (kts)	16	20	24	**TWA**
VMG upwind	5.54%	20.93%	5.54%	32.0%
52° reach	5.88%	22.24%	5.88%	34.0%
90° reach	2.60%	9.81%	2.60%	15.0%
135° reach	1.90%	7.19%	1.90%	11.0%
VMG run	1.38%	5.23%	1.38%	8.0%
TWS	17.30%	65.40%	17.30%	100.0%

Similarly there are **Predominant Reaching 5-Band** model rating options summarized here:

Pred Reaching 5-Band Low	2025			Average	6.0
Wind speed (kts)	4	6	8	**TWA**	
VMG upwind	7.90%	16.00%	7.90%	31.8%	
52° reach	8.50%	17.00%	8.50%	34.0%	
90° reach	3.80%	7.50%	3.80%	15.1%	
135° reach	2.80%	5.50%	2.80%	11.1%	
VMG run	2.00%	4.00%	2.00%	8.0%	
TWS	25.00%	50.00%	25.00%	100.0%	

Pred Reaching 5-Band Low/Med	2025				Average	9.9
Wind speed (kts)	6	8	10	12	TWA	
VMG upwind	1.18%	2.82%	2.82%	1.18%	8.0%	
52° reach	2.65%	6.35%	6.35%	2.65%	18.0%	
90° reach	5.59%	13.41%	13.41%	5.59%	38.0%	
135° reach	4.12%	9.88%	9.88%	4.12%	28.0%	
VMG run	1.18%	2.82%	2.82%	1.18%	8.0%	
TWS	14.70%	35.30%	35.30%	14.70%	100.0%	

Pred Reaching 5-Band Medium	2025					Average	13.0
Wind speed (kts)	8	10	12	14	16	TWA	
VMG upwind	0.62%	1.54%	3.70%	1.54%	0.62%	7.4%	
52° reach	1.39%	3.46%	8.32%	3.46%	1.39%	16.6%	
90° reach	2.93%	7.80%	17.56%	7.80%	2.93%	36.1%	
135° reach	2.16%	5.38%	12.94%	5.38%	2.16%	25.8%	
VMG run	0.62%	1.54%	3.70%	1.54%	0.62%	7.4%	
TWS	7.70%	19.70%	46.20%	19.70%	7.70%	100.0%	

Pred Reaching 5-Band Med/High	2025				Average	16.0
Wind speed (kts)	12	14	16	20	TWA	
VMG upwind	0.62%	1.54%	4.46%	1.38%	8.0%	
52° reach	1.35%	3.55%	10.04%	3.10%	18.0%	
90° reach	2.93%	7.30%	21.20%	6.57%	38.0%	
135° reach	2.16%	5.38%	15.62%	4.84%	28.0%	
VMG run	0.62%	1.54%	4.46%	1.38%	8.0%	
TWS	7.66%	19.29%	55.80%	17.29%	100.0%	

Pred Reaching 5-Band High	2025		Average	20.0
Wind speed (kts)	16	20	24	TWA
VMG upwind	1.38%	5.23%	1.38%	8.0%
52° reach	3.11%	11.77%	3.11%	18.0%
90° reach	6.57%	24.85%	6.57%	38.0%
135° reach	4.84%	18.31%	4.84%	28.0%
VMG run	1.38%	5.23%	1.38%	8.0%
TWS	17.30%	65.40%	17.30%	100.0%

Similarly there are also **Predominant Downwind 5-Band** model rating options summarized here:

Pred Downwind 5-Band Low	2025		Average	6.0
Wind speed (kts)	4	6	8	TWA
VMG upwind	2.00%	4.00%	2.00%	8.0%
52° reach	4.50%	9.00%	4.50%	18.0%
90° reach	9.50%	19.00%	9.50%	38.0%
135° reach	7.00%	14.00%	7.00%	28.0%
VMG run	2.00%	4.00%	2.00%	8.0%
TWS	25.00%	50.00%	25.00%	100.0%

Pred Downwind 5-Band Low/Med	2025				Average	9.9
Wind speed (kts)	6	8	10	12	TWA	
VMG upwind	1.18%	2.82%	2.82%	1.18%	8.0%	
52° reach	1.62%	3.88%	3.88%	1.62%	11.0%	
90° reach	2.21%	5.30%	5.30%	2.21%	15.0%	
135° reach	5.00%	12.00%	12.00%	5.00%	34.0%	
VMG run	4.70%	11.30%	11.30%	4.70%	32.0%	
TWS	14.70%	35.30%	35.30%	14.70%	100.0%	

Pred Downwind 5-Band Medium	2025					Average	12.8
Wind speed (kts)	8	10	12	14	16	TWA	
VMG upwind	0.62%	1.54%	3.70%	1.54%	0.62%	7.4%	
52° reach	0.85%	2.11%	5.08%	2.11%	0.85%	10.2%	
90° reach	1.16%	2.88%	6.93%	2.88%	1.16%	13.8%	
135° reach	2.62%	6.53%	15.71%	6.53%	2.62%	31.4%	
VMG run	2.46%	6.14%	14.78%	6.14%	2.46%	29.5%	
TWS	7.70%	19.20%	46.20%	19.20%	7.70%	100.0%	

Pred Downwind 5-Band Med/High	2025				Average	16.0
	12	14	16	20	TWA	
VMG upwind	0.62%	1.54%	4.46%	1.38%	8.0%	
52° reach	0.85%	2.11%	6.14%	1.90%	11.0%	
90° reach	1.16%	2.88%	8.37%	2.60%	15.0%	
135° reach	2.62%	6.53%	18.97%	5.88%	34.0%	
VMG run	2.46%	6.14%	17.86%	5.54%	32.0%	
TWS	7.70%	19.20%	55.80%	17.30%	100.0%	

Pred Downwind 5-Band High	2025		Average	20.0
Wind speed (kts)	16	20	24	TWA
VMG upwind	1.38%	5.23%	1.38%	8.0%
52° reach	1.90%	7.19%	1.90%	11.0%
90° reach	2.60%	9.81%	2.60%	15.0%
135° reach	5.88%	22.24%	5.88%	34.0%
VMG run	5.54%	20.93%	5.54%	32.0%
TWS	17.30%	65.40%	17.30%	100.0%

5. For 2025 there are also several scoring models that are specific to races held around the USA: these include the **Bayview Mackinac Race**, the **Chicago to Mackinac Race**, the **Harvest Moon Regatta** and the **St Francis YC's Rolex Big Boat Series**. Below is a summary of these models.

Courses used in the **Chicago to Mackinac Race**. Each model yields a single number Time on Time rating:

Chicago Mac All Purpose	2025							Average	11.2
Wind speed (kts)	4	6	8	10	12	16	20	24	TWA
VMG upwind	1.06%	1.70%	3.19%	5.53%	5.53%	2.76%	1.06%	0.41%	21.24%
52° reach	0.94%	1.50%	2.81%	4.88%	4.88%	2.44%	0.94%	0.37%	18.76%
90° reach	1.00%	1.60%	3.00%	5.20%	5.20%	2.60%	1.00%	0.40%	20.00%
135° reach	0.94%	1.50%	2.81%	4.88%	4.88%	2.44%	0.94%	0.37%	18.76%
VMG run	1.06%	1.70%	3.19%	5.53%	5.53%	2.76%	1.06%	0.41%	21.24%
TWS	5.00%	8.00%	15.00%	26.02%	26.02%	13.00%	5.00%	1.96%	100.00%

Chicago Mac Offwind	2025							Average	11.2
Wind speed (kts)	4	6	8	10	12	16	20	24	TWA
VMG upwind	0.41%	0.65%	1.22%	2.11%	2.11%	1.05%	0.41%	0.16%	8.12%
52° reach	0.55%	0.88%	1.64%	2.85%	2.85%	1.42%	0.55%	0.22%	10.96%
90° reach	0.77%	1.22%	2.30%	3.98%	3.98%	1.99%	0.77%	0.31%	15.32%
135° reach	1.55%	2.48%	4.64%	8.05%	8.05%	4.02%	1.55%	0.60%	30.94%
VMG run	1.74%	2.78%	5.21%	9.02%	9.02%	4.51%	1.74%	0.64%	34.66%
TWS	5.02%	8.01%	15.01%	26.01%	26.01%	12.99%	5.02%	1.93%	100.00%

Chicago Mac Upwind	2025							Average	10.7
Wind speed (kts)	4	6	8	10	12	16	20	24	TWA
VMG upwind	1.74%	2.78%	5.21%	9.02%	9.02%	4.51%	1.74%	0.65%	34.67%
52° reach	1.55%	2.48%	4.64%	8.05%	8.05%	4.02%	1.55%	0.60%	30.94%
90° reach	0.77%	1.22%	2.30%	3.98%	3.98%	1.99%	0.77%	0.30%	15.31%
135° reach	0.55%	0.88%	1.64%	2.85%	2.85%	1.42%	0.55%	0.22%	10.96%
VMG run	0.41%	0.65%	1.22%	2.11%	2.11%	1.05%	0.41%	0.16%	8.12%
TWS	5.02%	8.01%	15.01%	26.01%	26.01%	12.99%	5.02%	1.93%	100.00%

The **Bayview Mackinac Race** has two courses each with their own single number model ratings:

BYC Mac Shore course	2025						Average	7.7
Wind speed (kts)	4	6	8	10	12	14	16	TWA
VMG upwind	7.9%	6.6%	4.6%	3.8%	3.0%	2.3%	2.4%	30.6%
60° reach	4.4%	3.7%	2.4%	1.6%	1.0%	0.8%	0.6%	14.5%
90° reach	4.7%	3.8%	2.4%	1.5%	0.9%	0.6%	0.6%	14.5%
135° reach	5.3%	3.8%	2.5%	1.5%	1.2%	0.9%	0.6%	15.8%
VMG run	6.8%	5.5%	4.4%	3.1%	2.3%	1.4%	1.1%	24.6%
TWS	29.1%	23.4%	16.3%	11.5%	8.4%	6.0%	5.3%	100.0%

BYC Mac Cove Island	2025						Average	7.7
Wind speed (kts)	4	6	8	10	12	14	16	TWA
VMG upwind	7.6%	6.3%	4.6%	4.0%	3.1%	2.4%	2.4%	30.4%
60° reach	4.7%	4.1%	2.4%	1.4%	1.0%	0.8%	0.7%	15.1%
90° reach	4.0%	2.8%	1.7%	1.0%	0.7%	0.5%	0.4%	11.1%
135° reach	4.9%	4.3%	2.8%	2.0%	1.5%	1.1%	0.7%	17.3%
VMG run	7.8%	5.9%	4.7%	3.1%	2.1%	1.3%	1.2%	26.1%
TWS	29.0%	23.4%	16.2%	11.5%	8.4%	6.1%	5.4%	100.0%

The **St Francis YC** has 5 custom course options they may use to generate single-number ToT ratings besides the various Windward/Leeward courses called **SF Bay Tour**. These are described here:

SF Bay Tour 5-Band Low	2025	Average	6.5
Wind speed (kts)	6	8	TWA
VMG upwind	38.19%	11.22%	49.4%
52° reach	1.24%	0.36%	1.6%
110° reach	0.80%	0.23%	1.0%
120° reach	2.14%	0.63%	2.8%
135° reach	6.18%	1.82%	8.0%
150° reach	6.88%	2.02%	8.9%
VMG run	21.87%	6.42%	28.3%
TWS	77.30%	22.70%	100.0%

SF Bay Tour 5-Band Low-Medium	2025			Average	9.0
Wind speed (kts)	6	8	10	12	TWA
VMG upwind	7.26%	17.44%	17.44%	7.26%	49.4%
52° reach	0.24%	0.56%	0.56%	0.24%	1.6%
110° reach	0.15%	0.36%	0.36%	0.15%	1.0%
120° reach	0.41%	0.98%	0.98%	0.41%	2.8%
135° reach	1.18%	2.82%	2.82%	1.18%	8.0%
150° reach	1.31%	3.14%	3.14%	1.31%	8.9%
VMG run	4.16%	9.99%	9.99%	4.16%	28.3%
TWS	14.71%	35.29%	35.29%	14.71%	100%

SF Bay Tour 5-Band Medium	2025			Average	12.0	
Wind speed (kts)	8	10	12	14	16	TWA
VMG upwind	3.80%	9.49%	22.83%	9.49%	3.80%	49.4%
52° reach	0.12%	0.31%	0.74%	0.31%	0.12%	1.6%
110° reach	0.08%	0.20%	0.48%	0.20%	0.08%	1.0%
120° reach	0.21%	0.53%	1.28%	0.53%	0.21%	2.8%
135° reach	0.62%	1.54%	3.70%	1.54%	0.62%	8.0%
150° reach	0.69%	1.71%	4.11%	1.71%	0.69%	8.9%
VMG run	2.18%	5.43%	13.07%	5.43%	2.18%	28.3%
TWS	7.70%	19.21%	46.21%	19.21%	7.70%	100.0%

SF Bay Tour 5-Band Med-High	2025			Average	16.0	
Wind speed (kts)	12	14	16	20	TWA	
VMG upwind	3.80%	9.49%	27.57%	8.55%	49.4%	
52° reach	0.12%	0.31%	0.89%	0.28%	1.6%	
110° reach	0.08%	0.20%	0.57%	0.18%	1.0%	
120° reach	0.21%	0.53%	1.55%	0.48%	2.8%	
135° reach	0.62%	1.54%	4.46%	1.38%	8.0%	
150° reach	0.69%	1.71%	4.97%	1.54%	8.9%	
VMG run	2.18%	5.43%	15.79%	4.89%	28.3%	
TWS	7.70%	19.21%	55.80%	17.30%	100.0%	

SF Bay Tour 5-Band High	2025		Average	20.0
Wind speed (kts)	16	20	24	TWA
VMG upwind	8.55%	32.31%	8.55%	49.4%
52° reach	0.28%	1.05%	0.28%	1.6%
110° reach	0.18%	0.67%	0.18%	1.0%
120° reach	0.48%	1.81%	0.48%	2.8%
135° reach	1.38%	5.23%	1.38%	8.0%
150° reach	1.54%	5.82%	1.54%	8.9%
VMG run	4.89%	18.50%	4.89%	28.3%
TWS	17.30%	65.39%	17.30%	100.0%

The **Lakewood YC's Harvest Moon Regatta** has a constructed course model described here:

Harvest Moon Regatta	2025						Average	14.1
Wind speed (kts)	6	8	10	12	14	16	20	TWA
VMG upwind	0.5%	1.0%	1.0%	0.5%	0.5%	0.0%	0.0%	3.5%
60° reach	1.0%	2.0%	2.0%	4.0%	4.0%	1.0%	0.0%	14.0%
90° reach	0.0%	0.0%	5.0%	6.5%	6.5%	8.0%	5.0%	31.0%
120° reach	0.0%	0.0%	1.0%	5.5%	8.0%	8.0%	4.0%	26.5%
150° reach	0.0%	0.0%	1.0%	3.0%	5.0%	5.0%	4.0%	18.0%
VMG run	0.5%	0.5%	0.5%	0.5%	2.0%	2.0%	1.0%	7.0%
TWS	2.0%	3.5%	10.5%	20.0%	26.0%	24.0%	14.0%	100.0%