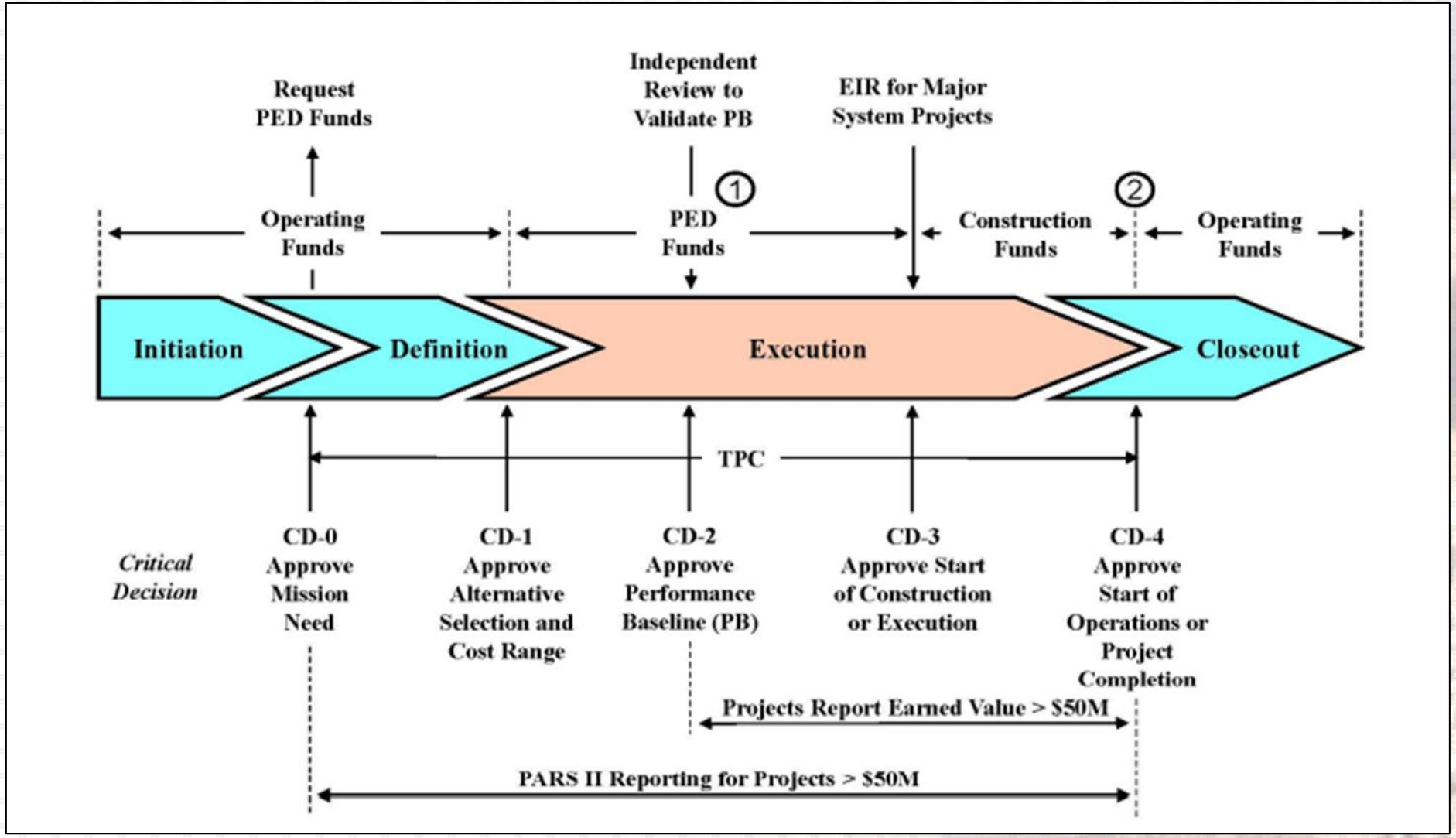
Accuracy of IEACs Study

EVM data captured from real projects.

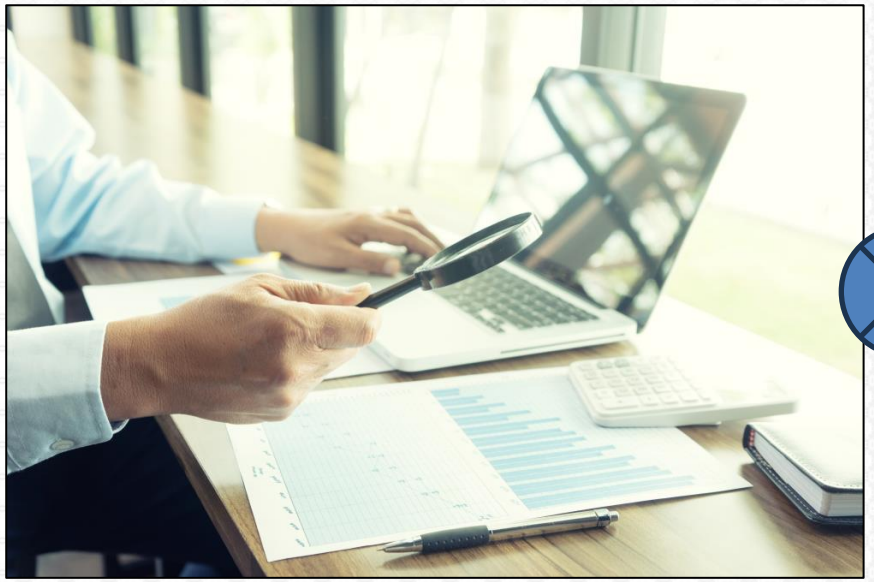
DoD, NASA, DOE Projects

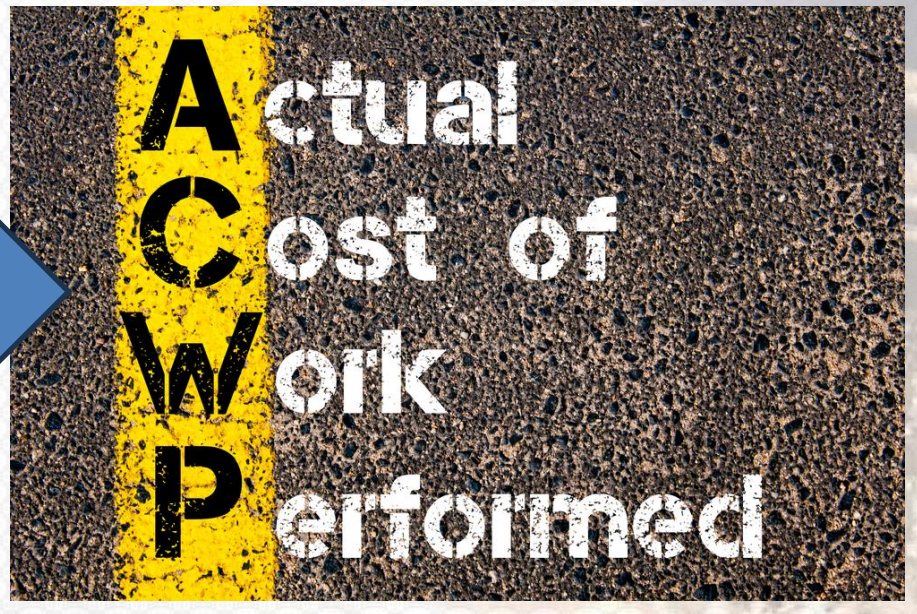
IEACs performed at 25%, 50%, and 75% complete.

DOE IS DIFFERENT



COMPARE TO FINAL ACWP





IEACs compared to final ACWP not to PM EACs

(PM EACs not available in enough cases and not really relevant)

IN THE BALLPARK?

A ‘rule-of-thumb’ method for testing the reported EAC.

USE OF IEACs

One recommended use of IEACs is to check that "contractor" or "CAM" EAC is not unreasonable, i.e. it fits into a ballpark of IEACs.

If the "contractor" or "CAM" EAC was lower or higher than all IEACs that might indicate it is not in line with demonstrated performance and remaining work and should be reviewed in detail.

Accuracy of IEACs Study

MAJOR CONCLUSION

THE IEACS CAN BE USED FOR A BALLPARK* WHEN COMPARED TO FINAL ACWP OUTCOME

*** THE FINAL ACWP FALLS WITHIN THE IEACS AT 25%, 50%, AND 75% FOR NON-DOE PROJECTS ENOUGH TIMES TO BE INDICATOR**

WHAT ELSE DID WE LEARN?

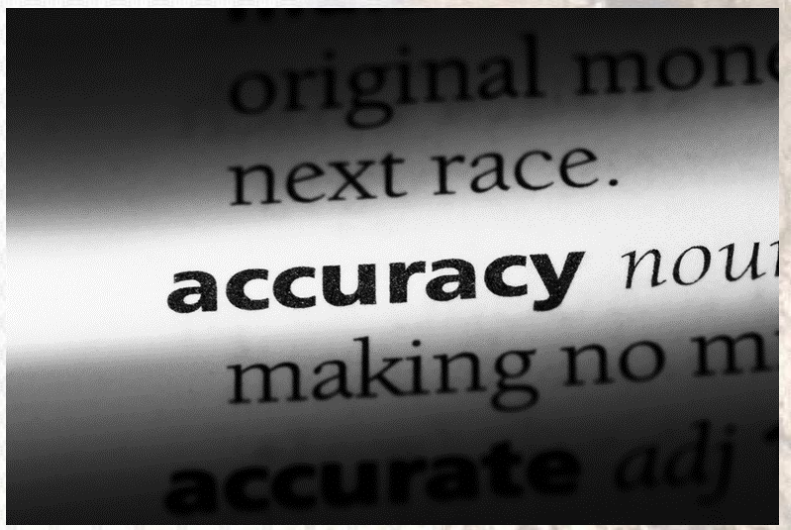
- HOW ACCURATE ARE THE IEACs?
- DO THEY TEND TO BE CONSISTENTLY OVER OR UNDER?
- IS ONE IEAC MORE ACCURATE THAN THE OTHERS?
- IS THERE A "MAGIC FORMULA"?
- WHAT ELSE CAN WE FIGURE OUT?

ACCURACY BANDS

25% POINT = WITHIN +/- 10% OF FINAL ACWP

50% POINT = WITHIN +/- 7% OF FINAL ACWP

75% POINT = WITHIN +/- 5% OF FINAL ACWP



Interesting Parallel Study

Quantified Benefits of Earned Value Management

(iEEE Aerospace Conference Paper: ieeexplore.ieee.org/document/10115759)

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- Assistant Group Supervisor of Finance and Administration for JHU/APL's Space Exploration Sector
- Currently responsible for directing the efforts of JHU/APL's validated Earned Value Management System and Scheduling efforts

APL JOHNS HOPKINS APPLIED PHYSICS LABORATORY

Interesting Parallel Study

Conclusions:

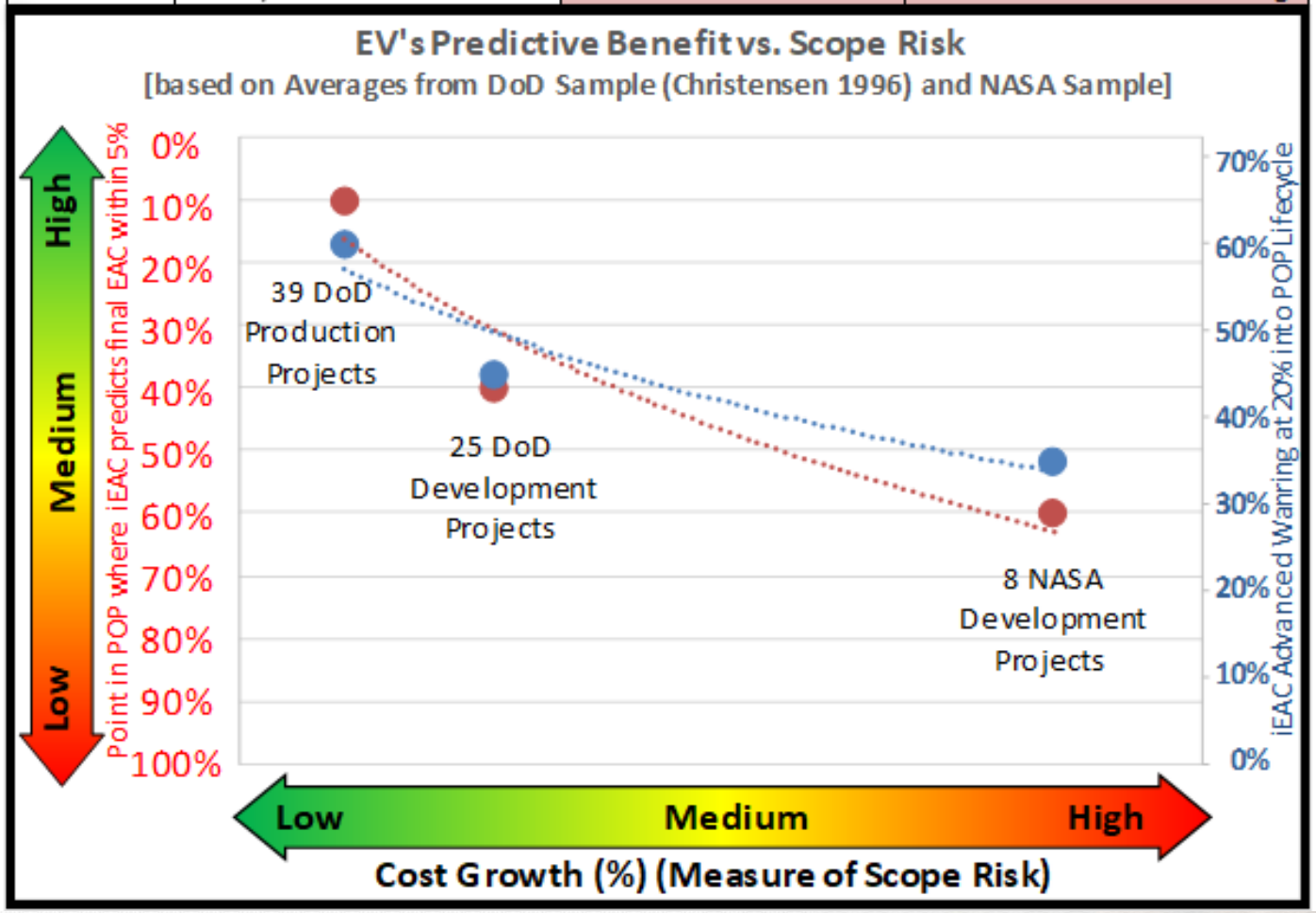
1. EVM iEACs provide advanced warning of cost growth across industries (DoD & NASA)
2. Advanced warning of future cost growth is less accurate and more delayed on projects with higher scope risk

Will investigate engaging Mr. Jones for further in-person update of findings at future NDIA IPMD meeting.

Predictive Accuracy

DoD Averages vs. NASA/APL Averages

Study	Data Set	Point in POP where iEAC predicts final EAC at ~5%	Advanced Warning 20% into Lifecycle
Christensen 1996	39 DoD Production Contracts	~10% into POP	~60% of POP Advanced Warning
	25 DoD Development Contracts	~40% into POP	~45% of POP Advance Warning
Jones 2023	8 NASA/APL Contracts	~60% into POP	~35% of POP Advanced Warning



Includes Christensen data on development and production from 1996 plus Jones' 2023 data.

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OVERALL ACCURACY ALL IEACS

OVERALL OPPORTUNITIES = 36 PROJECTS @ 3 % COMP POINTS WITH 6 IEACs (note some projects did not have data for all 3 measurement points).

540 TOTAL REAL OPPORTUNITIES

245 WITHIN ACCURACY BAND

245/630 = 46% ACCURATE

IEACs Employed in Study

IEAC #1 = BAC/CPI

IEAC #2 = ACWP + BCWR/(.2SPI + .8CPI)

IEAC #3 = ACWP + BCWR/(SPI*CPI)

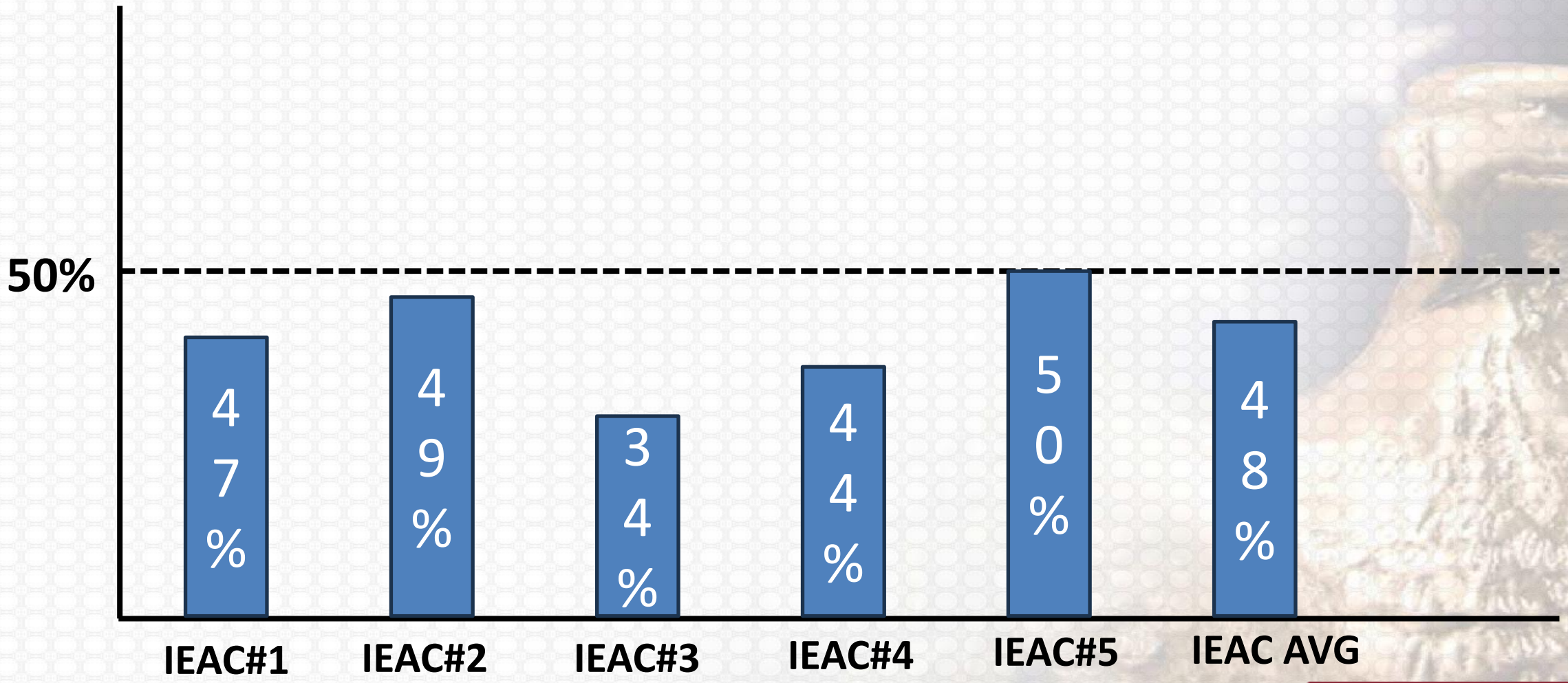
IEAC #4 = ACWP + BCWR

IEAC #5 = ACWP + BCWR/[WEIGHT *SPI)+(WEIGHT * CPI)] with

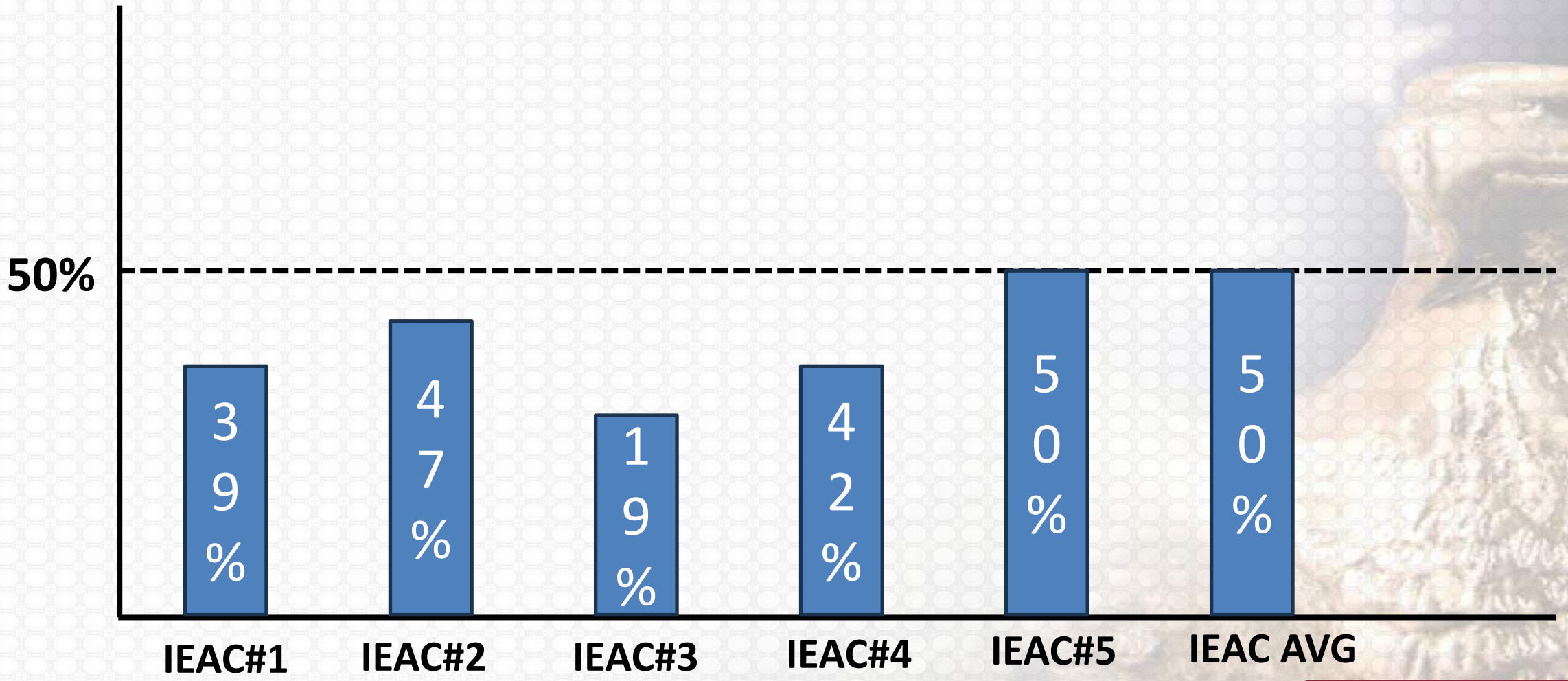
weight changing as % complete increases

IEAC #6 = AVERAGE OF #1 THRU #5

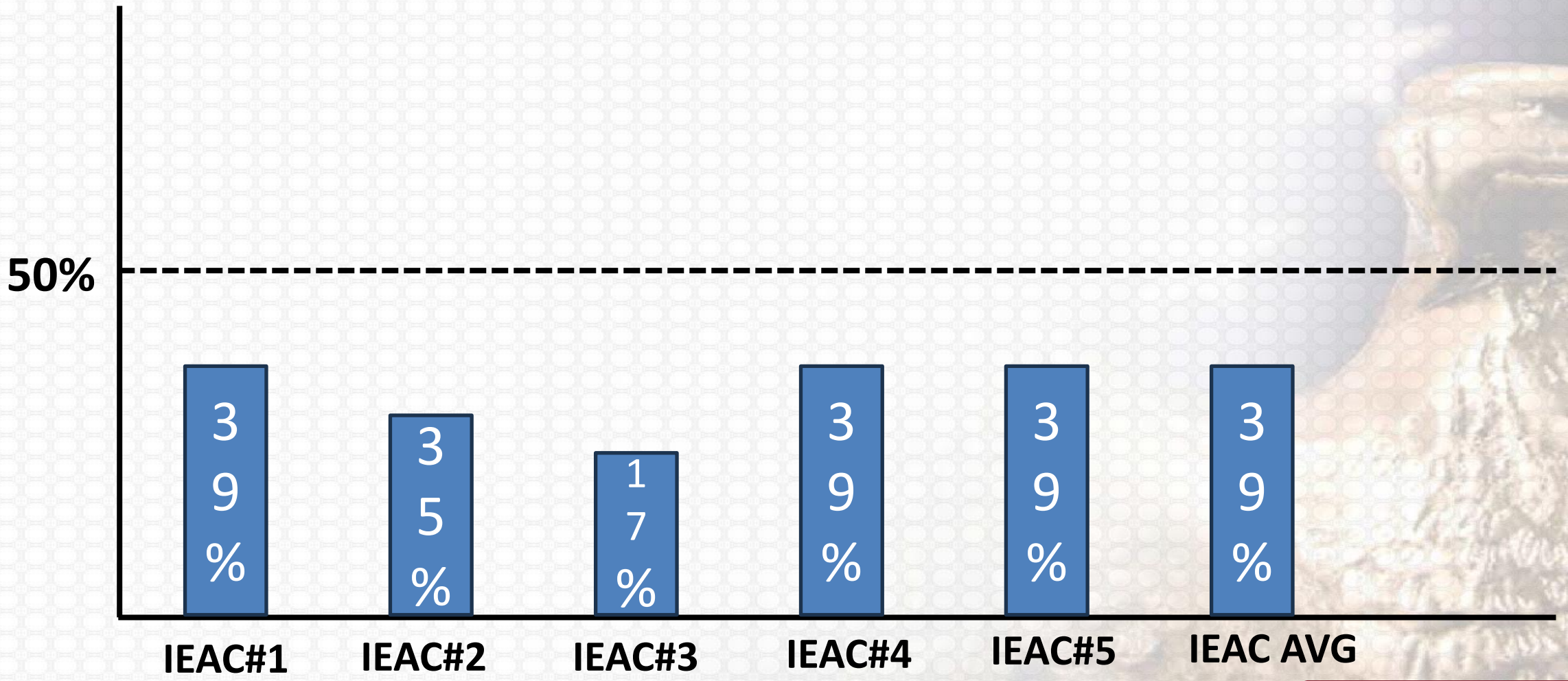
SCORE BY IEAC AT ALL POINTS (all projects)



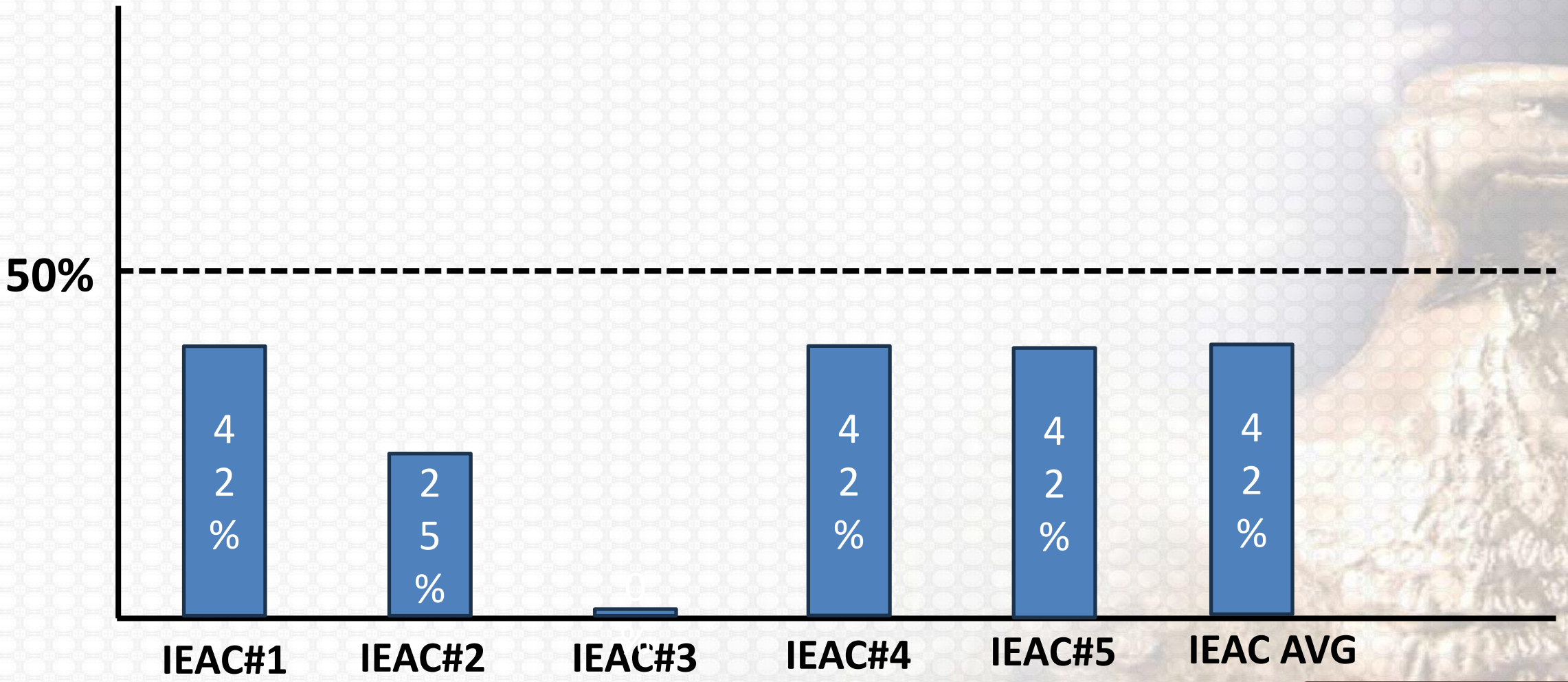
SCORE BY IEAC (non-DOE projects)



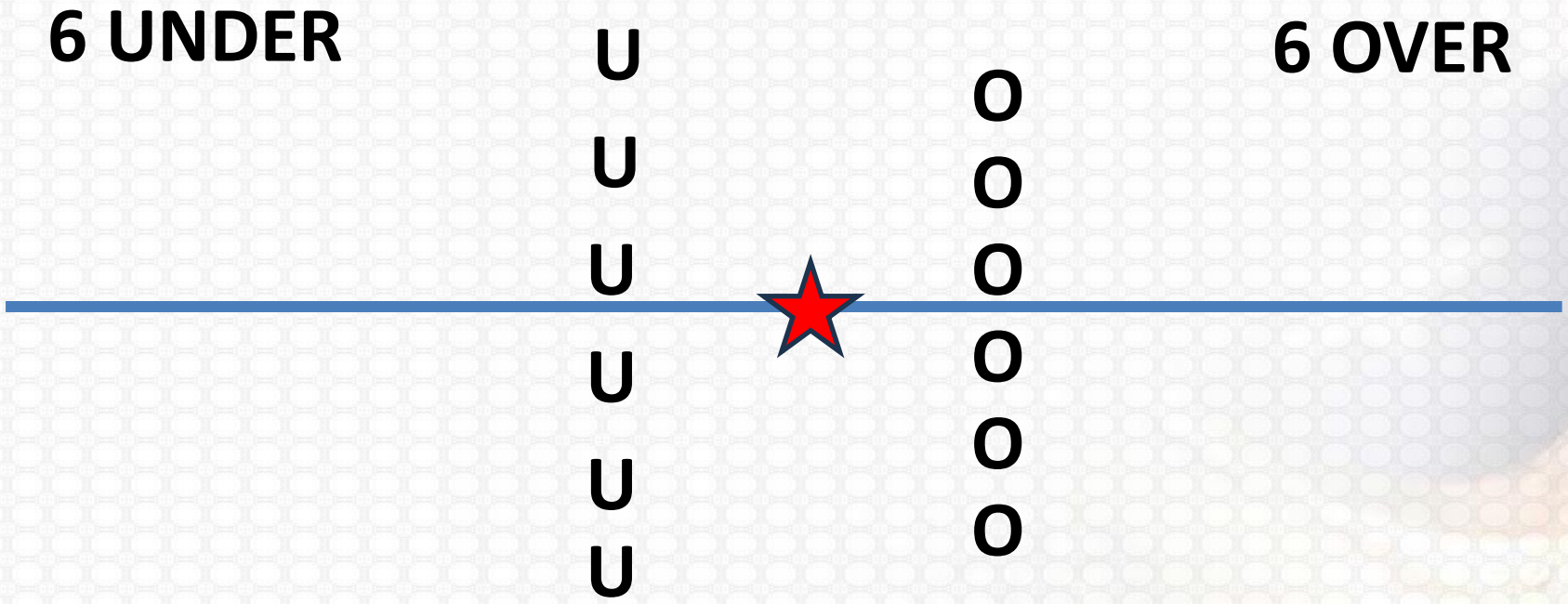
SCORE BY IEAC (@25%) All projects



SCORE BY IEAC (@25%) Non-DOE

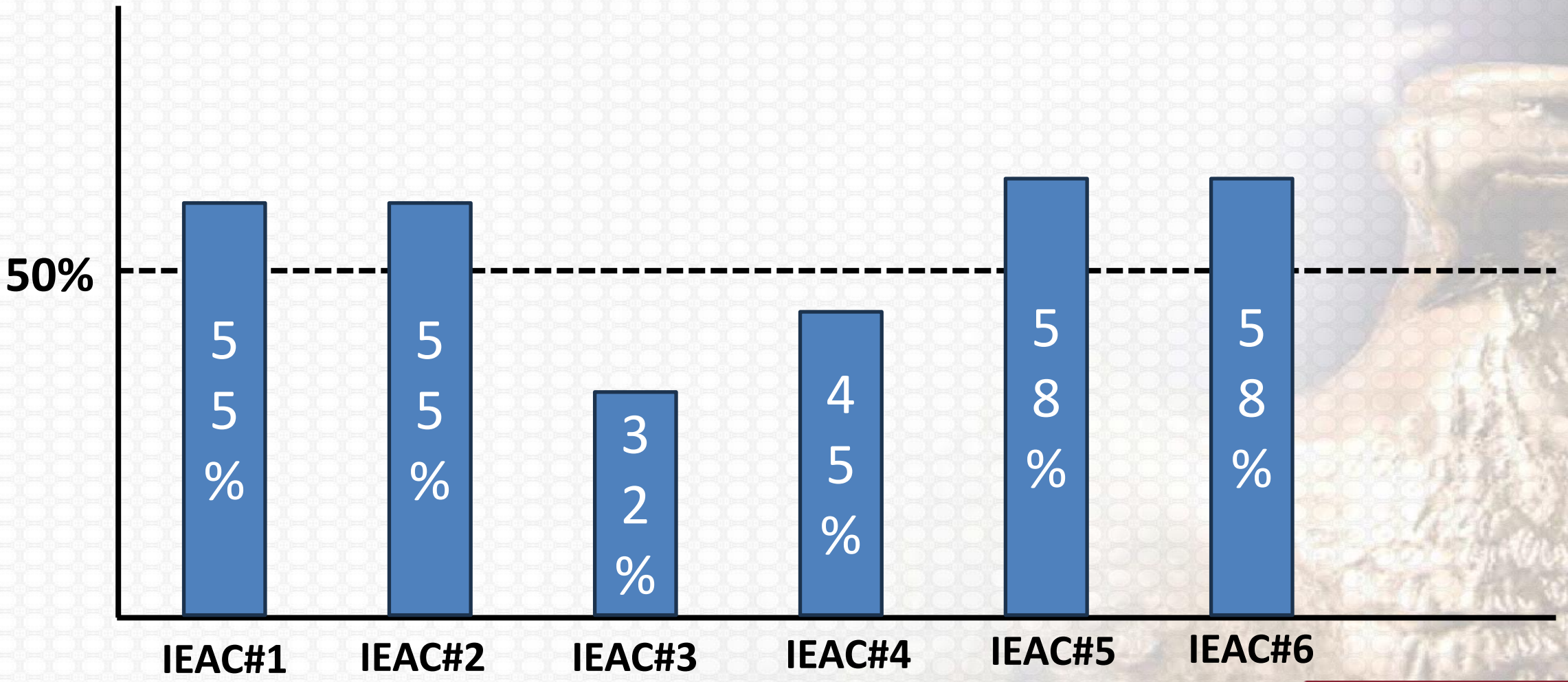


IEAC avg BALLPARK (@25%) Non-DOE

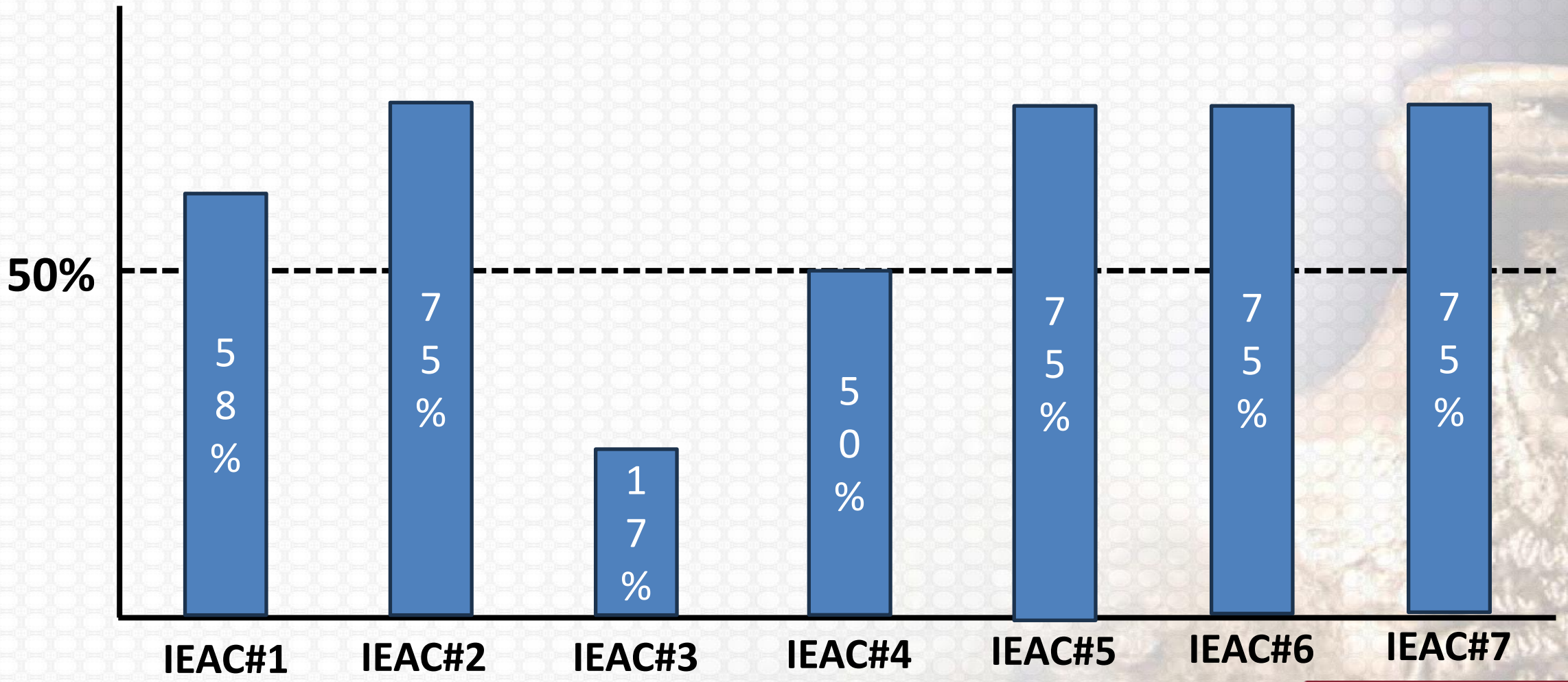


FINAL ACWP INSIDE PREDICTED BALLPARK

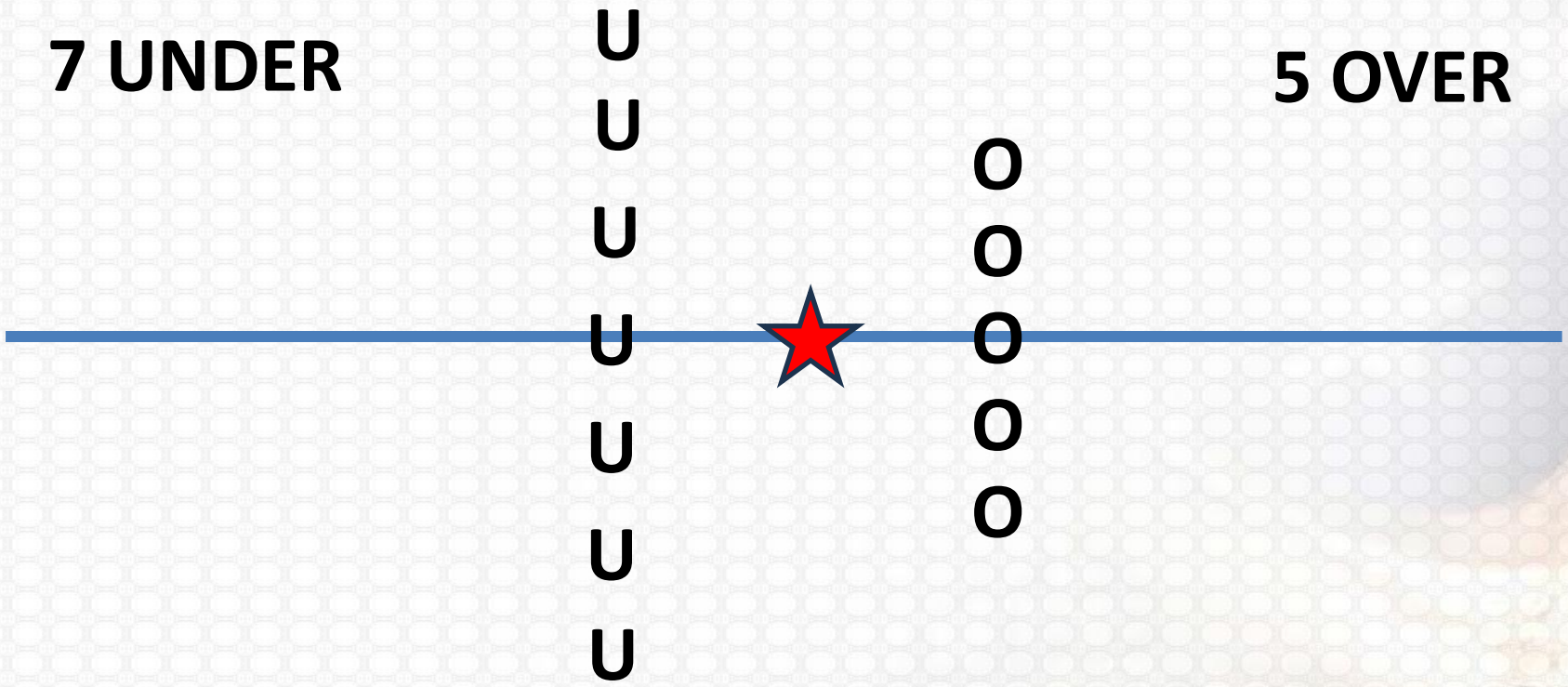
SCORE BY IEAC (@50%) All projects



SCORE BY IEAC (@50%) Non-DOE



IEAC avg BALLPARK (@50%) Non-DOE

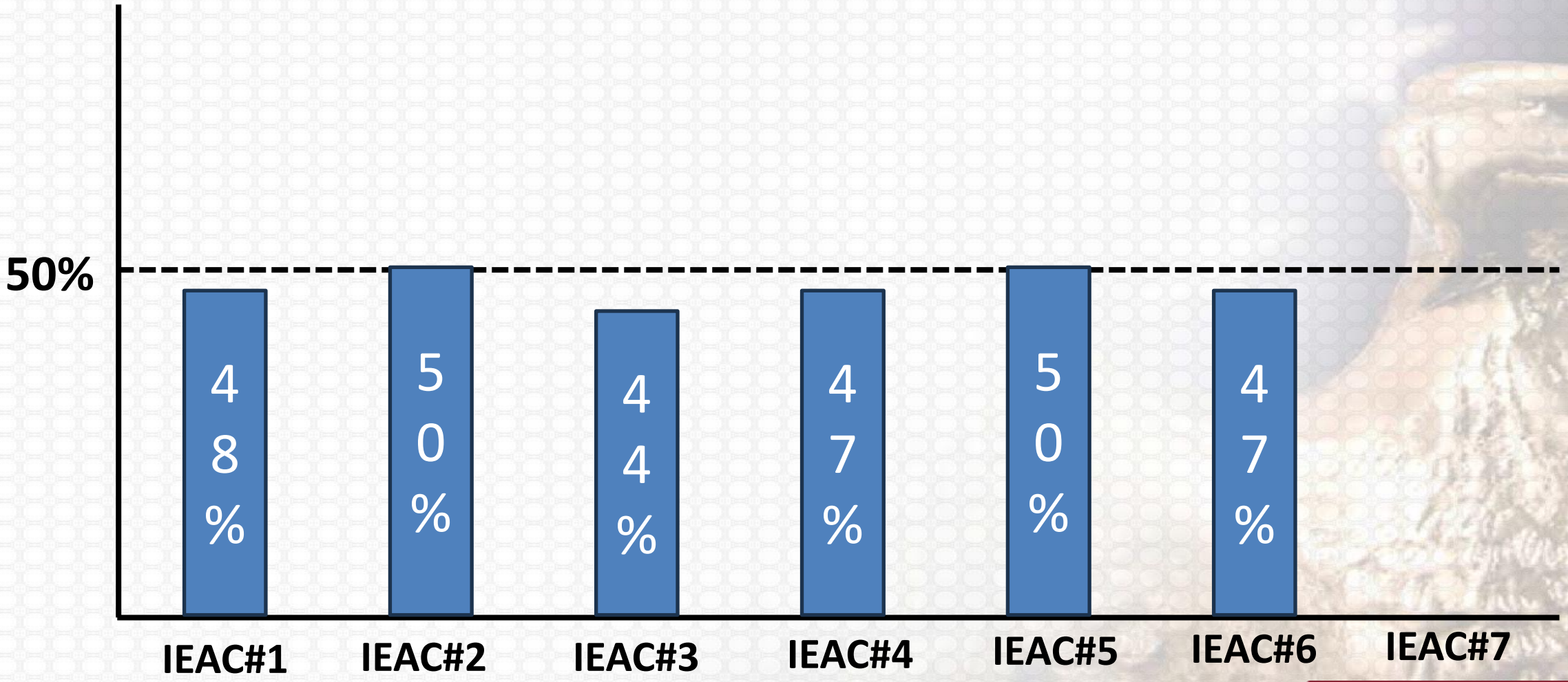


FINAL ACWP INSIDE PREDICTEDBALLPARK

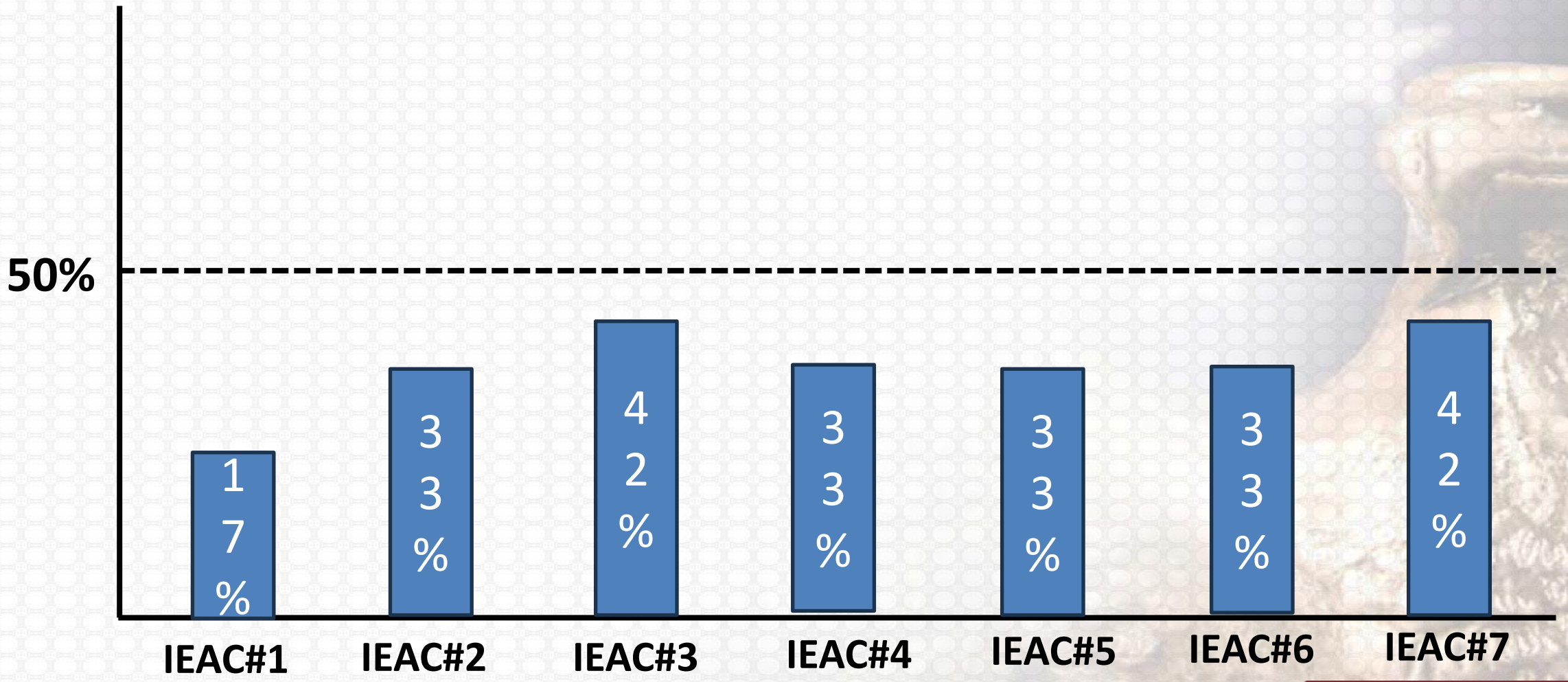
OVER/UNDER FINAL ACWP BY EAC (36 opportunities non-DOE)

IEAC	OVER	UNDER
1	14	22
2	14	22
3	21	15
4	8	28
5	12	24
AVG	12	24

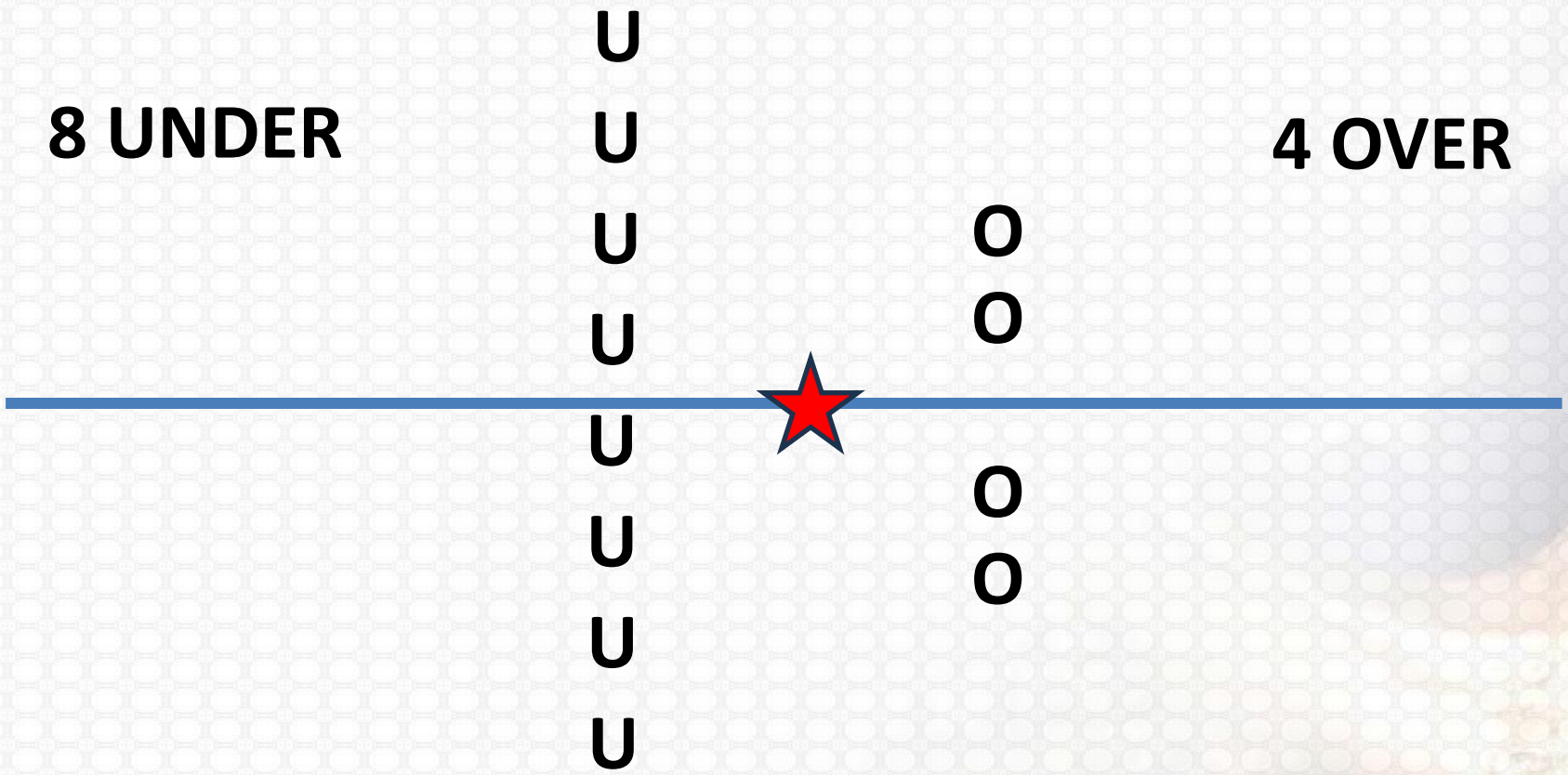
SCORE BY IEAC (@75%) All projects



SCORE BY IEAC (@75%) Non-DOE



IEAC avg BALLPARK (@75%) Non-DOE



FINAL ACWP INSIDE PREDICTED BALLPARK

To Provide Data or Help With the Study!

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