



ELECTRICITY MARKETS – LESSONS LEARNED
PRESENTATION TO THE NIGERIAN ENERGY
REGULATORY COMMISSION

RON MCNAMARA, PHD
FIRST PRINCIPLES ECONOMICS, LLC
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INTRODUCTION

THESE ELEVEN LESSONS ARE BASED ON EXTENSIVE AND DIRECT EXPERIENCE IN: ADVISING CLIENTS, DESIGNING/IMPLEMENTING/OPERATING ELECTRICITY MARKETS, ELECTRICITY DE-REGULATION, OR COMMERCIALY PARTICIPATING IN THE FOLLOWING MARKETS OR COUNTRIES:

- NEW ZEALAND
 - AUSTRALIA
 - SINGAPORE
 - INDONESIA
 - MALAYSIA
 - THE PHILIPPINES
 - SOUTH AMERICA
 - GHANA
 - NORD POOL
 - NIGERIA
 - IRELAND
- NORTH AMERICA:
 - ISO NEW ENGLAND
 - NEW YORK ISO
 - PJM
 - SOUTHWEST POWER POOL
 - ERCOT
 - MIDCONTINENT ISO
 - CALIFORNIA ISO
 - ONTARIO

LESSONS LEARNED #1 – FOCUS ON REAL TIME

- FOCUS ON REAL TIME...THIS CANNOT BE EMPHASIZED ENOUGH!
- MARKET DESIGNS THAT HAVE FOCUSED ON FORWARD OR BILATERAL MARKETS RATHER THAN REAL TIME OPERATIONS HAVE ALL FAILED!
- WHAT DO WE MEAN BY FOCUS?
 - UNDERSTAND WHAT THE DISPATCHER MUST DO IN ORDER TO BALANCE REAL TIME SUPPLY AND DEMAND.
 - UNDERSTAND WHAT INFORMATION HE/SHE NEEDS IN ORDER TO BALANCE REAL TIME POWER FLOWS.
 - DECIDE FROM WHOM AND HOW THE DISPATCHER WILL GET THIS INFORMATION.
 - UNDERSTAND THE TOOLS, I.E. SOFTWARE AND COMMUNICATIONS, THE DISPATCHER NEEDS IN ORDER TO PERFORM THEIR TASK.
 - UNDERSTAND THAT THE DISPATCHER DOES NOT HAVE MANY DEGREES OF FREEDOM.
 - POWER FLOWS OBEY THE LAWS OF PHYSICS NOT CONTRACTS OR RULES.
 - ALIGN THE PHYSICS (REAL TIME POWER FLOWS) WITH THE INCENTIVES (PRICES)!
 - PRICES ARE A TOOL TO ACHIEVE RELIABILITY AT LEAST COST.

LESSONS LEARNED #2 – DON'T SEPARATE THE MARKET FROM THE OPERATION OF THE PHYSICAL SYSTEM

- *CANNOT* AND *SHOULD NOT* SEPARATE THE “MARKET” FROM THE PHYSICAL SYSTEM.
- EVERY MARKET DESIGN THAT HAS SEPARATED “THE MARKET” FROM THE OPERATION OF THE TRANSMISSION SYSTEM HAS FAILED AND HAS HAD TO BE RE-DESIGNED AND RE-IMPLEMENTED.
- INSTEAD OF SEPARATING THE MARKET FROM PHYSICAL OPERATIONS, USE THE MARKET RULES TO ALIGN THE ECONOMIC INCENTIVES OF THE PARTICIPANTS WITH THE PHYSICS OF THE GRID.
- SEPARATION LEADS TO “UPLIFT”...THE MORE THE SEPARATION, THE MORE THE UPLIFT.
 - UPLIFT MEANS THE PRICE REALLY ISN'T THE PRICE.
 - THE GREATER THE UPLIFT THE MORE THE UNCERTAINTY AND THE WORSE THE DECISION MAKING...AND THE WORSE THE MARKET WILL PERFORM.

LESSONS LEARNED #3 – LIMIT AND CAREFULLY CONTROL OUTSOURCING

- DON'T TURN THE DESIGN AND IMPLEMENTATION OVER TO "OUTSIDERS."
 - THEY AREN'T NEARLY AS "EXPERT" AS THEIR RESUMES MIGHT SUGGEST.
 - THEY WON'T BE RUNNING THE SYSTEM THEY DESIGN AND IMPLEMENT.
 - INCENTIVES ARE WRONG.
- INSTEAD, SUPPLEMENT EXISTING STAFF WITH OUTSIDE RESOURCES...BUT DON'T HAND THE OUTSIDERS THE KEYS TO THE CAR!
 - HIRE THE RIGHT SENIOR STAFF *BEFORE* YOU HIRE THE CONSULTANTS.
 - DON'T HIRE THE "IMPLEMENTERS" BEFORE YOU ARE READY TO IMPLEMENT.
 - BE CAREFUL HOW YOU SEPARATE "THE PROJECT" FROM ONGOING OPERATIONS.
- DON'T MAKE IMPLEMENTATION AN "IT" PROJECT. "IT" IS VITALLY IMPORTANT...BUT IMPLEMENTING A MARKET IS MUCH MORE THAN "IT."

LESSONS LEARNED #4 – KNOW WHAT YOU NEED IN ORDER TO START AND DON'T START IF YOU AREN'T READY

- DELAYS, MISSED BUDGETS AND UNSUCCESSFUL MARKET LAUNCHES ARE POTENTIALLY FATAL PITFALLS THAT NEED NOT HAPPEN.
- WITH RESPECT TO THE MARKET DESIGN AND IMPLEMENTATION PROCESS TOO OFTEN THERE IS A DISCONNECT BETWEEN THE “DECISION-MAKERS”, THE “IMPLEMENTERS” AND THEN THE EVENTUAL “OPERATORS.”
 - EACH HAS THEIR OWN CONCERNS AND PERSPECTIVE.
 - A SUCCESSFUL IMPLEMENTATION REQUIRES EFFECTIVE MANAGEMENT OF THE THREE.
- MANAGEMENT NEEDS TO BE MORE THAN A “DASHBOARD.”
- DON'T TOLERATE EXCUSES.
 - FACTS YES...EXCUSES NO...LEARN THE DIFFERENCE.

LESSONS LEARNED #5 – WORK TO A SCHEDULE AND MAKE SURE THERE ARE CONSEQUENCES FOR NOT MEETING TIMELINES

- THIS IS THE COROLLARY TO LESSON # 4.
- CHANGE IS HARD...IT IS NATURAL TO PREFER THE STATUS QUO.
- AS A RESULT, THERE IS ALWAYS A BIAS TOWARDS DELAY AND MISSING DEADLINES.
- DON'T LET PERFECTION BE THE ENEMY OF THE GOOD.
- DECISION-MAKERS NEED TO KNOW THE DIFFERENCE BETWEEN:
 - “MUST HAVE” ITEMS AND
 - “LIKE TO HAVE” ITEMS.
- UNDERSTAND THE ORDER IN WHICH THINGS MUST TAKE PLACE.
 - E.G., DON'T WRITE CODE BEFORE THE RULES ARE FINALIZED.
- (I BELIEVE) NEW ZEALAND IS THE ONLY MARKET THAT WAS LAUNCHED ON TIME AND ON BUDGET.

LESSONS LEARNED #6 – SUCCESSFUL (AND EFFECTIVE) STAKEHOLDER INVOLVEMENT AND MANAGEMENT IS VITAL

- ONGOING STAKEHOLDER INVOLVEMENT IS VITAL, BUT IT MUST BE:
 - TRANSPARENT,
 - SYSTEMATIC,
 - ORGANIZED,
 - PURPOSEFUL, AND
 - WELL MANAGED.
- STAKEHOLDER PROCESS SHOULD BE RUN BY THE SO/MO.
 - DIFFERENT SKILL SET THAN TECHNICAL OPERATIONS.
- SO/MO MUST COLLABORATIVELY SET THE AGENDA WITH THE STAKEHOLDERS
 - AVOID UNILATERAL HI-JACKING OF THE AGENDA.
- MEETINGS SHOULD BE RUN ACCORDING TO A STANDARD, I.E., ROBERT’S RULES OF ORDER.
 - DETAILED MINUTES ENHANCES UNDERSTANDING AND AVOIDS REDUNDANT DEBATE.

LESSONS LEARNED #7 – INTERIM MARKETS ARE IMPORTANT

- THEY CAN BECOME PERMANENT IF THERE ISN'T A DRIVING FORCE TO REACH THE “FINAL” MARKET.
- SO/MO CREDIBILITY IS ESTABLISHED DURING THE INTERIM MARKET.
 - IF THE INTERIM MARKET FAILS, THEN SOME PARTICIPANTS WILL USE THIS TO ARGUE TO DELAY FURTHER MARKET EVOLUTION.
 - AS SUCH, THE SO/MO DO NOT HAVE VERY MUCH ROOM FOR “ON THE JOB TRAINING.”
- ESTABLISH CLEAR AND DEFINED OBJECTIVES FOR THE INTERIM MARKET BEFORE IT BEGINS:
 - IF THERE ARE NO OBJECTIVES, SOME MARKET PARTICIPANTS WILL NEVER BE READY TO MOVE AHEAD.
- SO/MO MUST COMMUNICATE TO POLICY MAKERS AND REGULATORS HOW MARKET IS PERFORMING.

LESSONS LEARNED #8 – APPRECIATE THE IMPORTANCE OF DATA

- DATA IS THE LIFEBLOOD OF THE SYSTEM.
 - FROM METERING TO NETWORK TOPOLOGY...AND EVERYTHING IN BETWEEN.
- PAY ATTENTION BEFORE RATHER THAN AFTER TO:
 - DATA GATHERING,
 - DATA USE,
 - DATA RETENTION/ARCHIVAL, AND
 - DATA RETRIEVAL.
- MAKE SURE THAT APPROPRIATE QA/QC PROCESSES ARE IN PLACE.
- DO NOT UNDERESTIMATE THE DATA STORAGE NEEDS AND REQUIREMENTS.
- UNDERSTAND WHAT THE DIFFERENCE BETWEEN “MISSION CRITICAL” (I.E., DISPATCH) AND “MEMORY CRITICAL” (I.E., SETTLEMENT) MEANS FOR THE ORGANIZATION AND OPERATION OF THE SO/MO AS WELL AS THE HARDWARE REQUIREMENTS FOR THE SO/MO.

LESSONS LEARNED #9 – GET SETTLEMENT RIGHT

- THE MARKET WILL STOP IF PARTICIPANTS DON'T GET PAID.
- AVOID EXCESSIVE CHARGE TYPES.
 - LINK CHARGES TO IDENTIFIABLE BEHAVIOR.
 - ALTERNATIVELY DON'T STRIVE FOR BREVITY JUST FOR THE SAKE OF BEING SIMPLE.
- MAKE SURE INVOICING IS ACCURATE, TIMELY AND UNDERSTANDABLE.
- AVOID/ELIMINATE CONSTANT RE-SETTLEMENT PROCESSES.
- MAKE SURE THE DISPUTE RESOLUTION PROCESS IS ROBUST
 - INITIALLY MARKET PARTICIPANTS ARE LIKELY TO USE THE DISPUTE RESOLUTION PROCESS SIMPLY TO UNDERSTAND THEIR INVOICES.
- INSIST ON A HIGH DEGREE OF INTEGRITY...PARTICIPANTS MUST TRUST THE SETTLEMENT PROCESS AND THE RESULTING INVOICES.

LESSONS LEARNED # 10 – UNDERSTAND THE IMPORTANCE OF THE MARKET RULES, BUSINESS PRACTICE MANUALS AND TRAINING

- THE ONLY SOURCES OF INFORMATION ABOUT HOW THE MARKET IS SUPPOSED TO WORK...AND HOW MARKET PARTICIPANTS ARE SUPPOSED TO BEHAVE...ARE FOUND IN EITHER THE MARKET RULES, THE BUSINESS PRACTICE MANUALS OR IN THE TRAINING MATERIALS.
 - ALL THREE MUST BE ALIGNED AND INTEGRATED.
 - MAKE SURE THEY ARE COMPLETE AND CORRECT.
 - MAKE SURE THEY ARE ALWAYS CURRENT.
- ENGAGE STAKEHOLDERS IN THE REVIEW OF THE BUSINESS PRACTICE MANUALS.
- MAKE SURE THE SO/MO ARE THE EXPERTS ABOUT HOW THE MARKET WORKS...AND MAKE SURE THEY ARE CORRECT!
- DON'T OUTSOURCE THE RESPONSIBILITY FOR THE BUSINESS PRACTICE MANUALS AND TRAINING – STAYS WITH THE SO/MO.

LESSONS LEARNED #11 – SOME FINAL CONSIDERATIONS

- HIRE THE “RIGHT” PEOPLE TO MANAGE THE SO AND MO.
 - SUCCESSFUL MARKETS CAN ALWAYS BE TRACED TO GOOD LEADERSHIP.
 - GOOD LEADERSHIP IS NOT JUST INWARD FOCUSED...ALSO ABLE TO COMMUNICATE TO A BROAD RANGE OF STAKEHOLDERS.
- TRANSPARENCY AND COMMUNICATION ARE VITALLY IMPORTANT.
- DON'T ALLOW THE SO AND MO TO BECOME INSULAR...THEY ARE A SERVICE PROVIDER TO THE MARKET AND NOT A PRINCIPAL IN THE MARKET...AND THEY NEED TO UNDERSTAND THE CONCERNS OF THE PARTICIPANTS.
- SUCCESSFUL MARKETS RELY RELATIVELY LESS ON CONSULTANTS TO “RUN THE SHOW” ...RATHER CONSULTANTS PROVIDE SPECIFIC EXPERTISE WITHIN A BROADER MANAGEMENT STRUCTURE.
- DON'T BE INNOVATIVE JUST FOR THE SAKE OF BEING DIFFERENT.
 - THE LAWS OF PHYSICS DON'T CHANGE BY COUNTRY...THERE IS A REASON WHY THE MARKETS CONTINUE TO CONVERGE.