# Run 16 RHIC Machine/Experiments Meeting

April 26, 2016

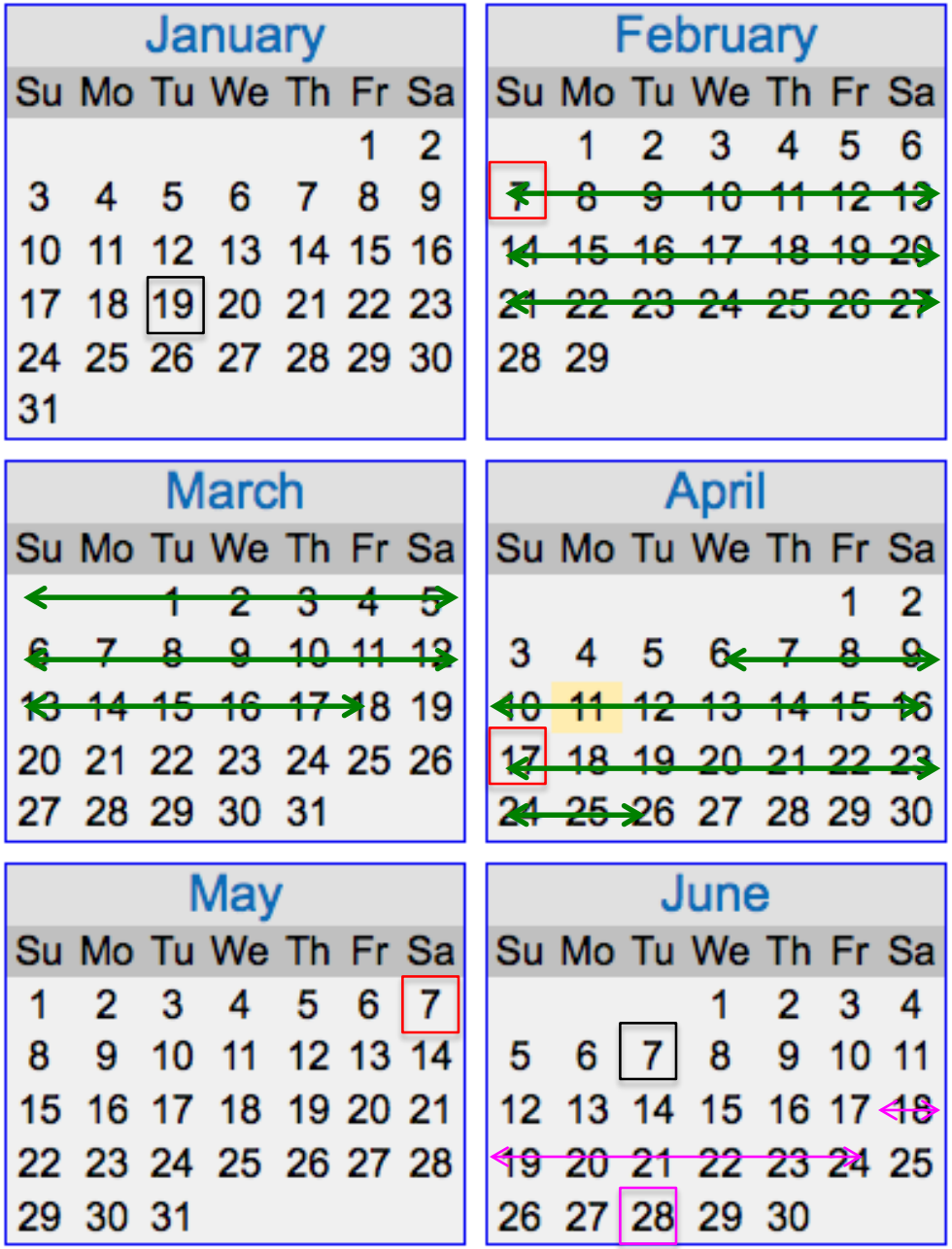
**Agenda:**

- Answers to Questions for PHENIX — Yasuyuki Akiba
- Answers to Questions for STAR — Zhangbu Xu
- The Calendar — Bill Christie
- AOB

**READYTALK LOGIN INFO**
**Audio Login**
**Toll-Free (US & Canada):** 9-1-866-740-1260
**Toll:** 303.248.0285
**Access Code:** 8304505

**ReadyTalk link** https://core.readytalk.com/interface/guest.jsp?host=readytalk&an=8667401260&ac=8304505

# The Calendar




- Cool down to 4.5K starts on January 19th.
- Physics Running Declared on Sunday February 7th.
- Physics Running halted by Diode at 7 am on Friday March 18th
- ~ 5 5/7's weeks
- Physics running restarted on Wednesday evening, April 6th.
- Gap of ~ 19.5 days
- Original "10 wks" of AuAu physics running would have been concluded on Sunday April 17th.
- If one adds 19.5 days to this original end date, one lands on Saturday May 7th.
- Without any extension, the Cryo warm up completes on June 7th.
- Original date for the start of the Cryo warm up was Friday, June 3rd. 20 Cryo weeks total.

- Shown in Magenta is where the CeC running would fall *with A THREE WEEK EXTENSION.*

# Archive

# Outcome from the April 12th RHIC Coordination meeting

- A decision that was taken at the meeting was that the earliest end date for the AuAu running would be pushed from April 17th (original end date for 10 weeks of physics running) to the vicinity of May 7th. This accounts for the 19.5 days that RHIC was offline for the diode repair.
- Extending Run 16. Given the funds saved from the reduced power load during the three weeks that RHIC was offline, and the lower cost for power through February of this year (March Power costs not yet known), the funds were deemed to be available to extend the run by at least two weeks.
- Depending on the power cost for March, it may be possible to add an additional week to the run, making for a total of a three week extension. It is expected that the power cost for March will be known soon (this week) and thus a final decision of the length of a possible run extension will be made by/at the RHIC Coordination meeting on April 26th.
- To better understand the implications of the possible options for allocating the RHIC beam time between May 7th (earliest end of AuAu running) and the end date for the run, Berndt asked both collaborations to provide him with input to specific questions.
- The date for detailing all aspects of the plan for the remainder of Run 16 is by or on April 26th.

# Run 16 plan based on 20 weeks cryo operation

and Fischer et.al. RHIC Collider Projections (FY 2016 – FY 2022), 19 April 2015

***Today, April 12th***

- 19 Jan, Begin cool-down to 4.5K
- 25 Jan, Beam in Yellow
- ~~22~~ 26 Jan, Beam in Blue
- ~~29 Jan~~, Feb 3, First Collisions
- ~~5~~ 7 Feb, Begin 10 week **√s=200 GeV/n AuAu** physics run
- 7 am March 18th, RHIC Operations halted for Blue ring Diode issue
- 7 pm on April 6th, RHIC Operations resumes (19.5 days down).
- ~~15~~ 18 April, End 10 week √s=200 GeV/n AuAu physics run
- ~~16~~ 19 April, Begin 1.4 week **√s=20 GeV/n dAu** physics run
- ~~26~~ 29 April, End 1.4 week √s=20 GeV/n dAu physics run
- 29 April, Begin 1.4 week **√s=39 GeV/n dAu** physics run
- 9 May, End 1.4 week √s=39 GeV/n dAu physics run
- 12 May, Begin 0.9 week **√s=62 GeV/n dAu** physics run
- 18 May, End 0.9 week √s=62 GeV/n dAu physics run
- 21 May, Begin 0.9 week **√s=200 GeV/n dAu** physics run
- 27 May, End 0.9 week √s=200 GeV/n dAu physics run
- 29 May, Begin 5 day **E=40 GeV/n Au** CEC physics run
- 3 June, End 5 day E=40 GeV/n Au CEC physics run
- 3 June, begin cryo warm-up
- 7 June, cryo warm-up complete, ***20.0 cryo weeks*** of operation

*dAu schedule as proposed by PHENIX, scaled to 4.7 total physics weeks*

- Actual physics time for each energy is TBD

Schedule in Orange text not updated yet

Note that there will be discussions on how the Blue Ring Diode issue and downtime impact the rest of the Run 16 Plan/Schedule after we are back up and running the AuAu program.

See http://www.rhichome.bnl.gov/AP/RHIC2016/ for the Run Coordinator's detailed plan

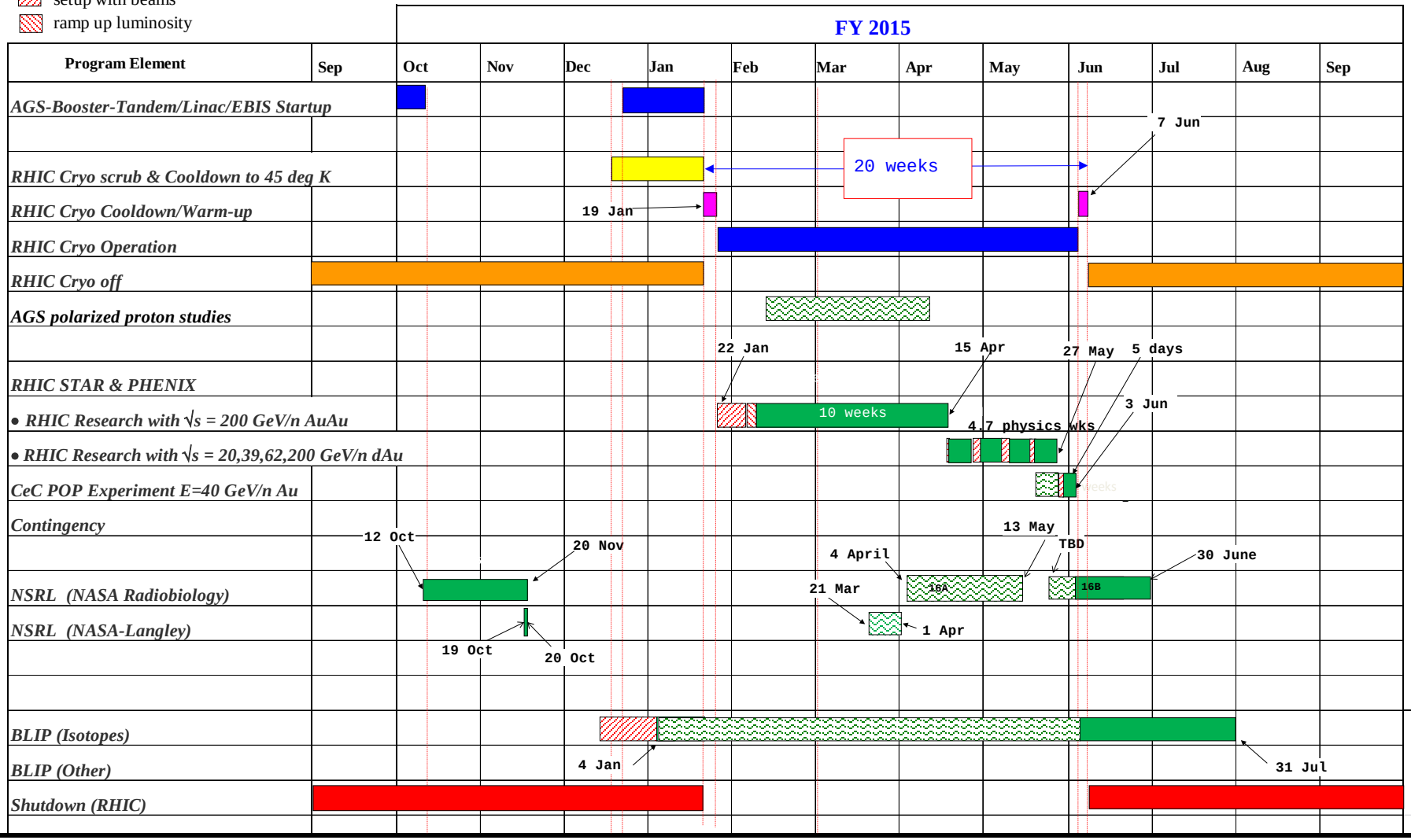
http://www.bnl.gov/cad/esfd

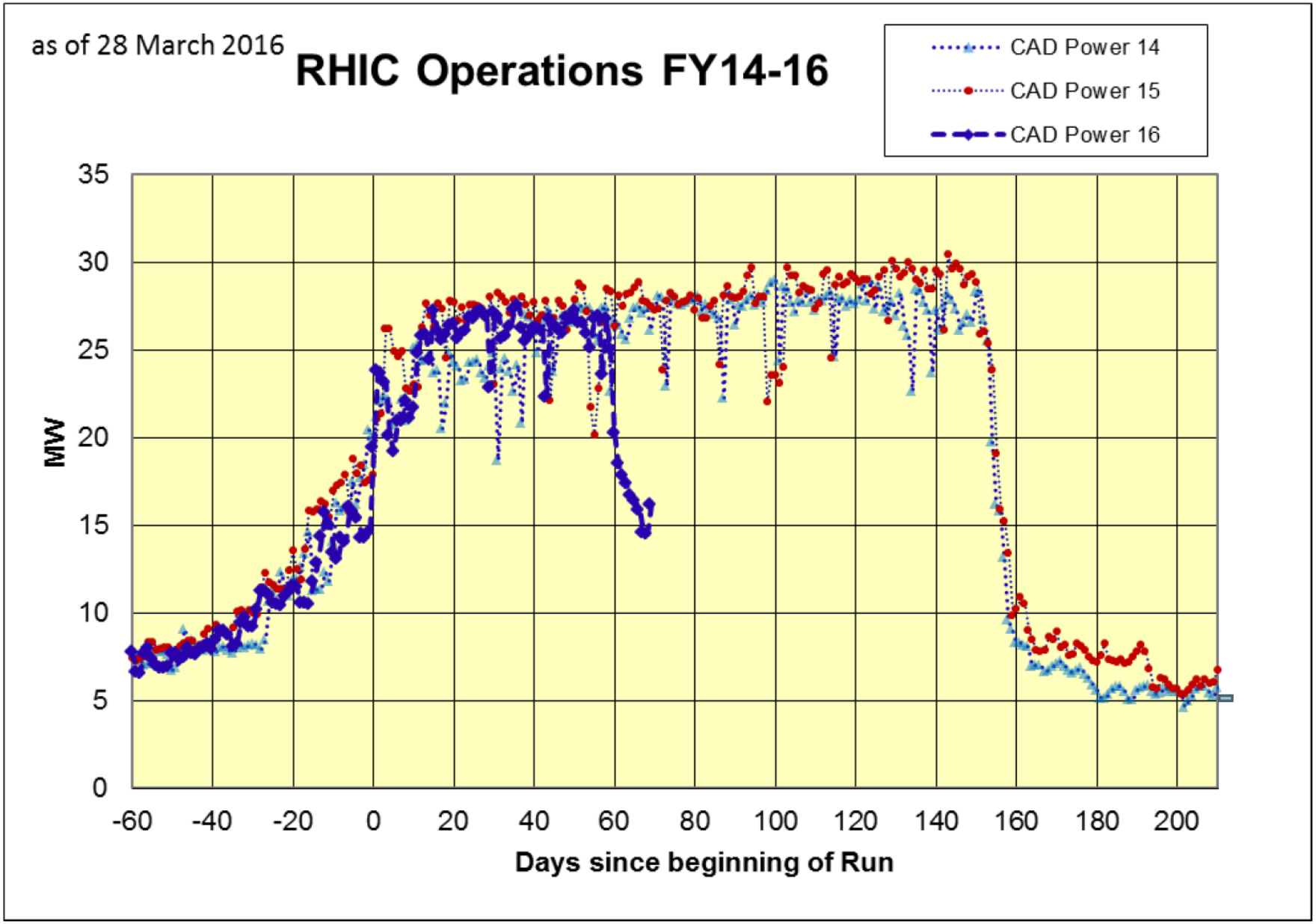
Scheduling Physicist: Christie

# C-A Operations-FY16

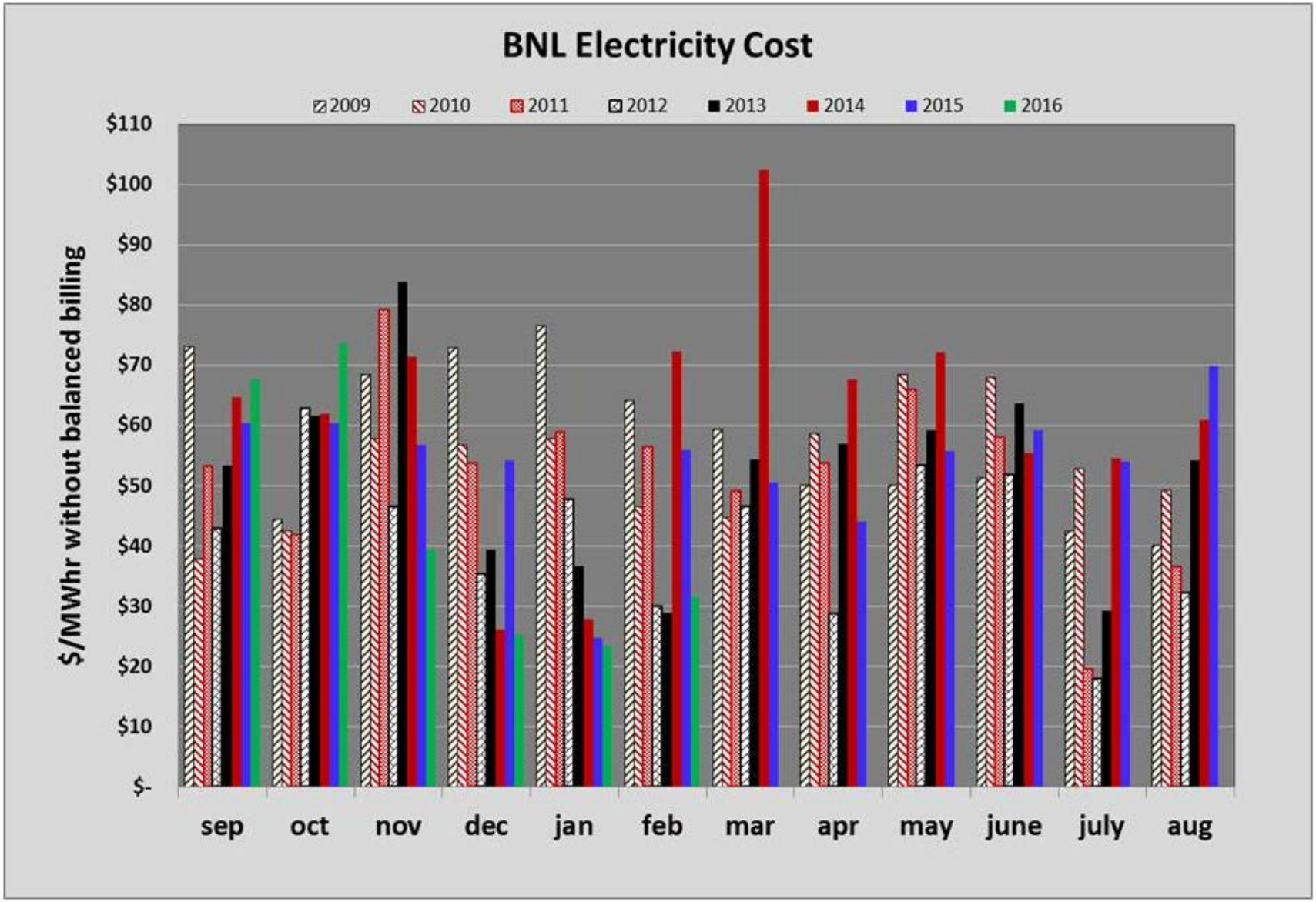
14 Jan 16

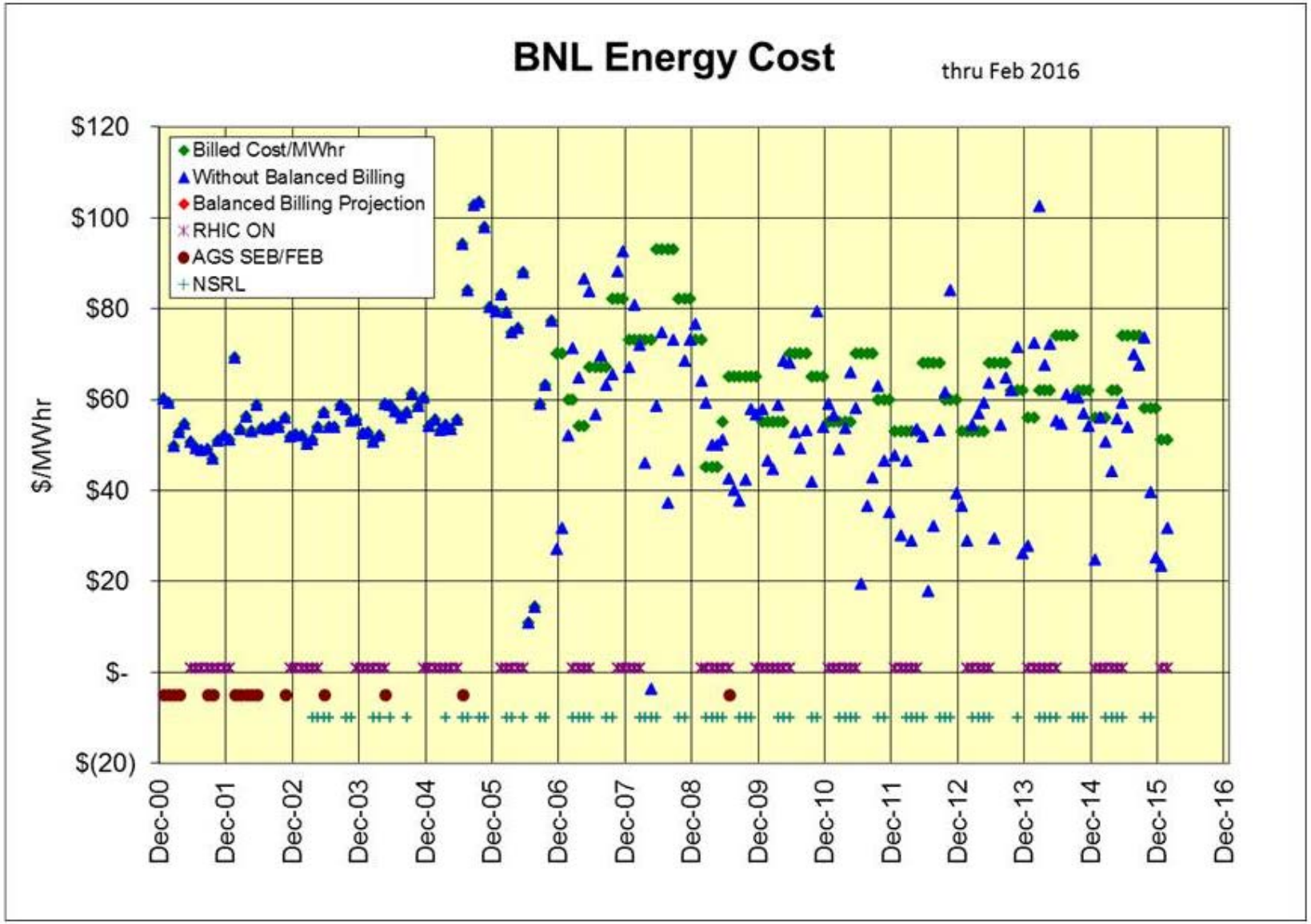
*planned*




as of 28 March 2016
RHIC Operations FY14-16
CAD Power 14
CAD Power 15
CAD Power 16
MW
35
30
25
20
15
10
5
0
-60
-40
-20
0
20
40
60
80
100
120
140
160
180
200
Days since beginning of Run

# Power Cost through February 2016




BNL Energy Cost
thru Feb 2016
Billed Cost/MWhr
Without Balanced Billing
Balanced Billing Projection
RHIC ON
AGS SEB/FEB
NSRL
$/MWhr
$120
$100
$80
$60
$40
$20
$-
$(20)
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16

| March | | | | | | |
|---|---|---|---|---|---|---|
| Su | Mo | Tu | We | Th | Fr | Sa |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | ~~18~~ | ~~19~~ |
| ~~20~~ | ~~21~~ | ~~22~~ | ~~23~~ | ~~24~~ | ~~25~~ | ~~26~~ |
| ~~27~~ | ~~28~~ | ~~29~~ | ~~30~~ | ~~31~~ | | |

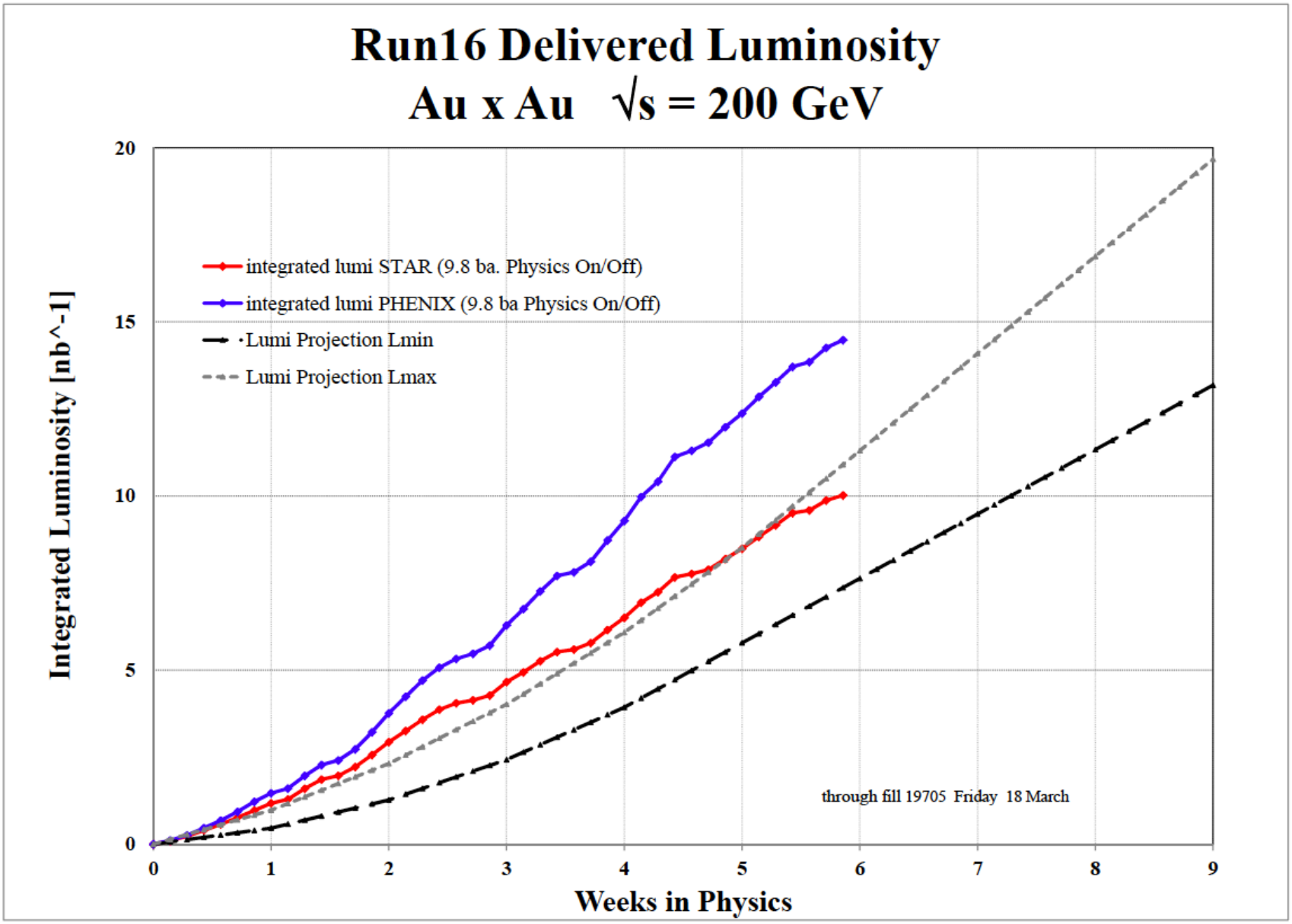
| April | | | | | | |
|---|---|---|---|---|---|---|
| Su | Mo | Tu | We | Th | Fr | Sa |
| | | | | | ~~1~~ | ~~2~~ |
| ~~3~~ | ~~4~~ | ~~5~~ | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

| May | | | | | | |
|---|---|---|---|---|---|---|
| Su | Mo | Tu | We | Th | Fr | Sa |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |

| June | | | | | | |
|---|---|---|---|---|---|---|
| Su | Mo | Tu | We | Th | Fr | Sa |
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | | |

AuAu Physics running lasted 5 4/7 wks before failure.

If Physics running resumes on April 6$^{th}$, the 10 wks would end on May 7$^{th}$




Delivered Integrated Luminosity through last Physics Fill on Friday March 18th

# SCHEDULE FOR WEEK FROM MONDAY March 15TH – SUNDAY MAR. 20TH

MONDAY:

- PHYSICS RUNNING

TUESDAY:

- PHYSICS RUNNING

WEDNESDAY:

- PHYSICS RUNNING UNTIL 7:45 AM
- SCHEDULED MAINTENANCE from 8 am to 4 pm
- RECOVER RHIC and PHYSICS RUNNING, 4 pm on

THURSDAY:

- PHYSICS RUNNING UNTIL 9:45 AM
- MACHINE DEV. From 10 am to 1 pm for Model Corrections
- MACHINE DEV. From 1 pm to 3 pm for 56 MHz
- PHYSICS RUNNING 3 PM ON

FRIDAY:

- PHYSICS RUNNING

SATURDAY AND SUNDAY:

- PHYSICS RUNNING

PHENIX goals: 10 weeks, 1.8 $nb^{-1}$ with 12 billion MB events recorded within |z|< 10 cm vertex, request dynamic $\beta^*$ squeeze.

STAR goals: 13 weeks 10 $nb^{-1}$ sampled for MTD and 2 billion MB events recorded within |z| < 6 cm for HFT

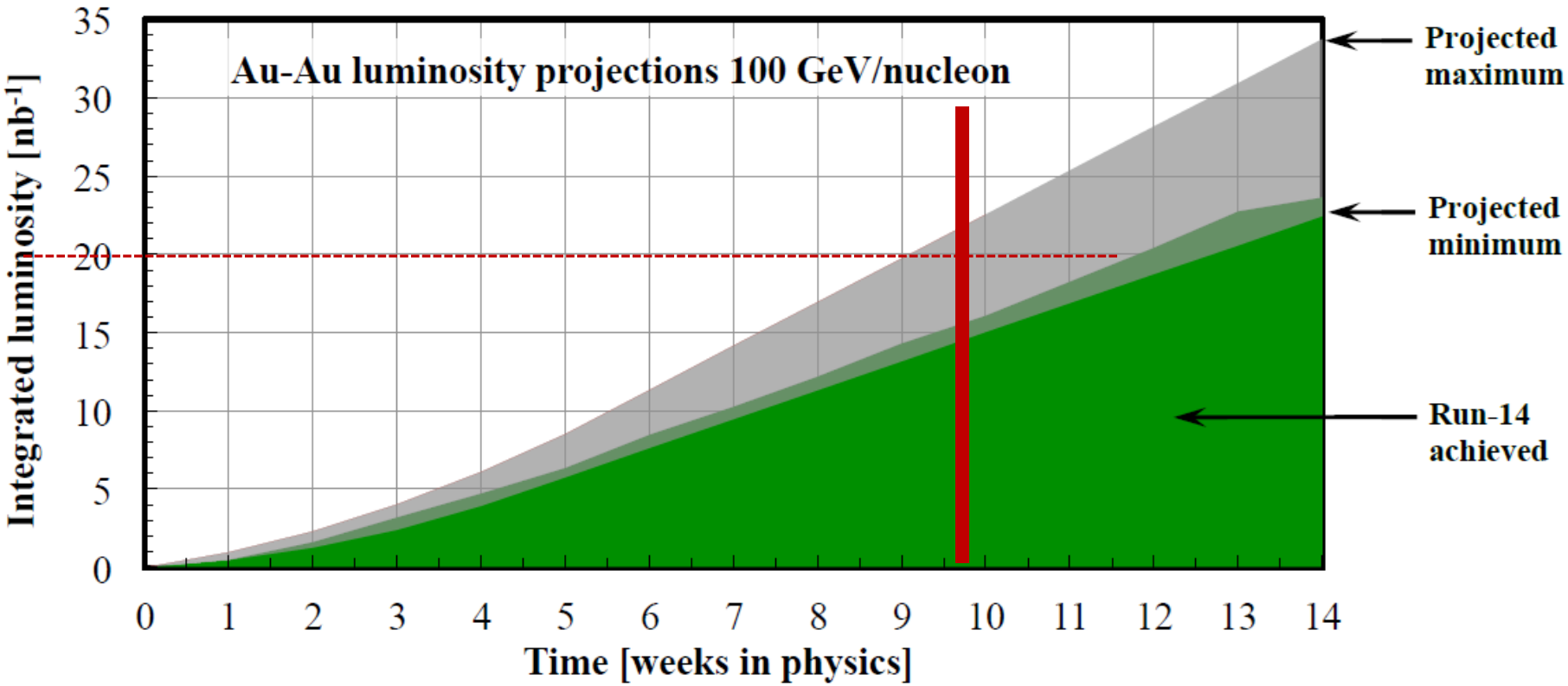
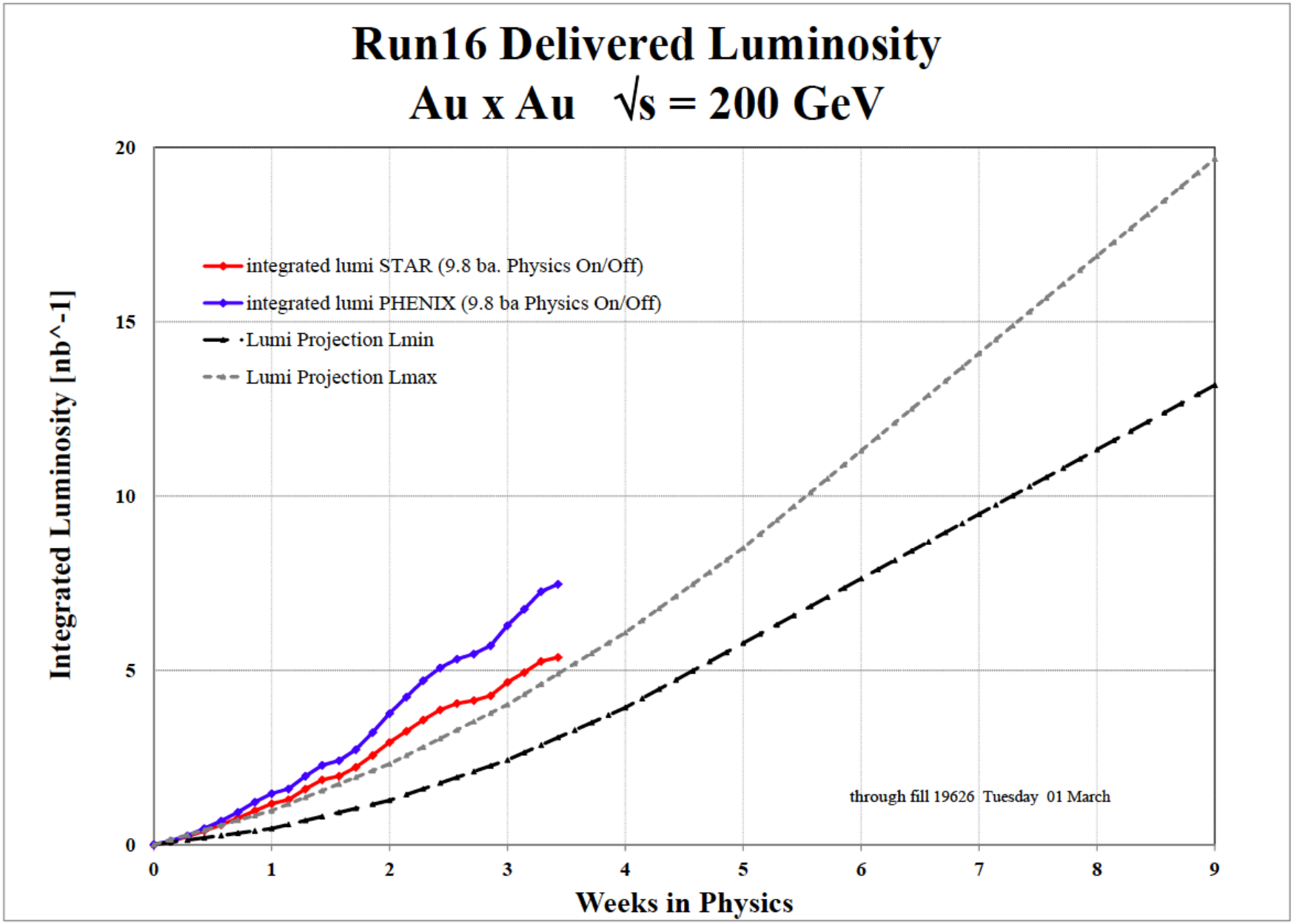



**Figure 3: Projected minimum and maximum integrated luminosities for Au+Au collisions at 100 GeV/nucleon beam energy, assuming linear weekly luminosity ramp-up in 6 weeks.**

**From Fischer et. al., RHIC Collider Projections (FY 2016 – FY 2022), 19 April 2015**


Run16 Delivered Luminosity
Au x Au √s = 200 GeV
integrated lumi STAR (9.8 ba. Physics On/Off)
integrated lumi PHENIX (9.8 ba Physics On/Off)
Lumi Projection Lmin
Lumi Projection Lmax
through fill 19626 Tuesday 01 March
Integrated Luminosity [nb^-1]
Weeks in Physics
0
5
10
15
20
0
1
2
3
4
5
6
7
8
9

# SCHEDULE FOR WEEK FROM MONDAY FEB. 29TH – SUNDAY MAR. 6TH

MONDAY:

- PHYSICS RUNNING

TUESDAY:

- PHYSICS RUNNING until 10:50 am
- RHIC RING ACCESS FROM 11 AM TO 12:30 PM FOR CEC
    - PHENIX AND STAR ALSO GO INTO IRS
- PHYSICS RUNNING FROM 12:30 PM ON

WEDNESDAY:

- PHYSICS RUNNING UNTIL 7:45 AM
- SCHEDULED ACCESS 8 AM TO 4 PM
- 4 PM ON, PHYSICS RUNNING

THURSDAY:

- PHYSICS RUNNING UNTIL 9 AM
- BEAM DEV. 9 AM TO 7 PM (56 MHZ, XFER FTN. CORRECTION, S*, CEC APERATURE SCAN)
- PHYSICS RUNNING 7 PM ON

FRIDAY THROUGH WEEKEND:

- PHYSICS RUNNING

# Who's Who for 2016

RHIC 100 x 100 GeV AuAu:
**Run Coordinator:** Xiaofeng Gu, xgu@bnl.gov , 631-344-5446 (office)

RHIC dAu Energy Scan:
**Run Coordinator:** Chuyu Liu, cliu1@bnl.gov , 631-344-4431 (office)

**Scheduling Physicist:** Bill Christie, christie@bnl.gov, 631-344-7137
Assistants through 29 Jan:
Yousef Makdisi, makdisi@bnl.gov, 631-344-4932(office)
Phil Pile, pile@bnl.gov, 631-344-4643 (office), 631-834-2005 (cell)

**AGS Liaison:**
Haixin Huang, huanghai@bnl.gov , 631-344-5446 (office)