State of North Carolina Department of Health and Human Services

Division of Health Benefits (NC Medicaid)

North Carolina Medicaid Health Information Technology Implementation Advance Planning Document-Update – FFYs 2020-2022

Submitted by:

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1 Executive Summary

North Carolina Department of Health and Human Services (NC DHHS), Division of Health Benefits (NC Medicaid) is submitting this Implementation Advance Planning Document Update (I-APDU) to request Federal Financial Participation (FFP) from the Centers for Medicare and Medicaid Services (CMS) for Federal Fiscal Year (FFY) 2022 for administrative costs of the NC Medicaid Electronic Health Record (EHR) Incentive Program[1] and FFY 2020 Q4 through FFY 2021 for related health information exchange (HIE) and health information technology (HIT) activities. This I-APDU follows the requests for

- FFP approved October 3, 2018 for FFYs 2019-2020 for HIT funding
- FFP approved May 21, 2019[2] to support the continued onboarding of Medicaid providers to the state-designated health information exchange (HIE), NC HealthConnex, as well as to make enhancements to NC HealthConnex to support Medicaid transformation efforts, statewide opioid misuse prevention, and improved public health interoperability in North Carolina
- FFP approved July 19, 2019 for FFYs 2019-2021 for HIT funding

These activities are aimed at facilitating HIE among Eligible Professionals (EPs), Eligible Hospitals (EHs), and other NC Medicaid providers aligned with the Promoting Interoperability (PI) Program and the NC Medicaid Electronic Health Record (EHR) Incentive Program authorized by the American Recovery and Reinvestment Act of 2009 (ARRA).[3] These activities are also closely aligned with the mid-range goals from the Office of the National Coordinator for Health IT (ONC)'s Nationwide Interoperability Roadmap of expanding data sources and users in the interoperable health IT ecosystem to improve health and lower costs (2018-2020).[4]

NC DHHS has a vested interest in the progress of HIT both at the state and national levels and understands and accepts the responsibility to efficiently utilize available federal dollars for administration of incentive payments to Medicaid providers. NC DHHS commits to use the funds for the purposes of administering the incentive payments and enabling the meaningful use of CEHRT by Medicaid providers. NC DHHS agrees to continue development of appropriate oversight mechanisms, including detailed tracking of provider registration, attestation, and data collection, which will continue beyond implementation of CEHRT to ensure measurable operational value and improved patient care.

This I-APDU was revised in parallel with the North Carolina State Medicaid HIT Plan (SMHP) and has incorporated information previously submitted separately as the NC HIE I-APD.

Per CMS guidance on July 8, 2020, this I-APDU has been revised to delete funding related to PDMP projects in the financial tables and the rationale documented in the summary of the text section. PDMP funding removed in this revision totals $3,006,537 ($2,705,883 at 90 percent FFP).

This I-APDU requests FFP $116,327 at 90 percent in HITECH funds for FFY 2020 Q4 and FFP $ 4,215,293 at 90 percent in HITECH funds for FFYs 2021 – 2022 in addition to FFP $12,505,962 (excluding PDMP) at 90 percent for FFY 2021 approved May 21, 2019 and FFP $3,548,086 at 90 percent for FFY 2021 approved July 19, 2019. Previously approved funds are shown in *Table 1* below.

[1] Effective April 24, 2018, CMS renamed the Medicaid EHR Incentive Program the Promoting Interoperability Program (PIP). While the EHR Incentive Program is part of the Promoting Interoperability Program, we will still operate under the name NC Medicaid EHR Incentive Program.

[2] previously submitted in HIE I-APDU Version 2.0 for Q4 FFY 2019-Q4 FFY 2021 and approved May 21, 2019

[3] Pub. L. 111-5, enacted on February 17, 2009.

[4] Version 1.0, published 2015.

Table 1 – Total NC Federal Funding Requests for FFYs 2020-2021 approved as of July 19, 2019

	HIT		HIE		HIT + HIE		
	Federal Share (90%)	State Share (10%)	Federal Share (90%)	State Share (10%)	Federal Share (90%)	State Share (10%)	Federal + State Total Computable
FFY 2020	$5,431,891	$603,543	$16,103,836	$1,789,315	$21,535,727	$2,392,858	$23,928,585
FFY 2021	$3,114,034	$346,004	$14,144,896	$1,571,655	$17,258,930	$1,917,659	$19,176,589
Total Cost	$8,545,925	$949,547	$30,248,732	$3,360,970	$38,794,657	$4,310,517	$43,105,174

2 Results of Activities included in the Planning Advance Planning Document (P-APD) and SMHP

HIT P-APD Activity Summary

NC DHHS' Medicaid submitted a HIT Planning APD (P-APD), #20100122P-00, on January 22, 2010. This P-APD was approved by CMS on February 9, 2010, and included the following planning tasks:

1. Provider Outreach to include broad-brushed surveying and input from providers for assessment of provider readiness and "shovel ready" ideas for practical EHR and HIT applications within their professional environments;
2. Consumer Outreach to include focus groups of recipients and/or recipient family members to assess consumer specific educational needs and to develop ideas for consumer educational materials and tools;
3. Development of the North Carolina SMHP, beginning with an "As-Is" landscape assessment and baseline measurement of the current use of HIT in North Carolina to facilitate gap analysis for a "To-Be" vision and roadmap plan, inclusive of the activities necessary to deliver incentive payments to meaningful users of CEHRT who see the requisite Medicaid patient volume;
4. Development of the HIT I-APD to implement activities identified in the SMHP necessary to support the state's HIT "To-Be" vision; and,
5. Creation of a strategy to develop the necessary operational infrastructure support and program audit requirements to monitor results at each step of the operational plan.

The P-APD was officially closed out with CMS on September 26, 2011.

The table below was taken from the P-APD and outlines the HIT high-level task activities and deliverables. This table has been updated with actual activities completed during the planning phase of Medicaid HIT activities in 2010.

Table 2: P-APD High-level Task Activity

Task	Expected Deliverable	Actual Activity/Deliverable
Coordinate and Prepare SMHP	As part of the creation of the SMHP: 1. "As-Is" and "To-Be" HIT landscapes; and, 2. HIT roadmap outlining tasks and milestones to reach the "To-Be" condition over the next five years.	SMHP submitted to and approved by CMS.

Task	Expected Deliverable	Actual Activity/Deliverable
Prepare an Environmental survey for status of EHR and Health Information Exchange (HIE) capabilities within North Carolina	An acceptable estimate of the current state of the incidence and use of EHR and HIE within the state. This information will be the basis of the work to be done to achieve the end goal.	To determine the status of North Carolina's "As-Is" HIT landscape, NC Medicaid developed and participated in two surveys of NC Medicaid providers. One pertained specifically to EHR usage and the second pertained to broadband availability and included questions on EHR use. As of Nov 1, 2010, 2,133 EHR surveys had been compiled. These surveys indicated that 49 percent of respondents currently used EHRs and an additional 14 percent planned to begin use within a year following survey completion. The broadband survey was not limited to Medicaid or healthcare providers; however, 1,136 of the respondents indicated that their establishments provided healthcare services. Of these, all but six had access to broadband internet connectivity, and 38-73 percent reported use of EHRs (variance based on practice type). Survey results are described in the SMHP.
Create a methodology to administer the Medicaid EHR Incentive Program	Planning/implementation approach and technical architecture.	High-level definition of NC-MIPS was completed in July 2010, which included an alternatives analysis of software solutions. The selected approach is described in the SMHP and I-APD.
Identify best operational mechanisms for monitoring federal and state-specified meaningful use criteria. Document demonstration of achieving meaningful use at the provider level	A solution that is mainly automated in nature to minimize the human labor that is needed to monitor and report on each provider.	The operational strategy and monitoring of meaningful use are under development for implementation in Year 2. Year 1 of the EHR Incentive Program is limited to Adopt, Implement, and Upgrade of CEHRT.
Provider Education	A plan for high-level provider consumer education, to include: 1. Draft of the proposed training curriculum; 2. Draft of high-level samples of training aids and documentation for presentations; 3. Draft proposal on content of a web-based training program; and,	The plan for provider consumer education is described in the SMHP. A provider website has been established for communications and questions regarding the Medicaid EHR Incentive Program, and a program FAQ document has been created. HIT announcements have been included in monthly Medicaid Bulletins, and information about the program can be found at three different websites: • NC Medicaid;

Task	Expected Deliverable	Actual Activity/Deliverable
	4. Media campaign plan for provider education.	• NCTracks (enrollment); and, • State HIT site.

2.1.1 P-APD Funding Summary

The table below summarizes approved, expended, and remaining P-APD funding. In summary, NC DHHS was more efficient in planning for HIT than originally estimated. For the planning phase of the project, the total cost was $847,012 (FFP $762,311 at 90%). NC DHHS completed the planning phase with $1,708,108 in unspent P-APD funds (FFP $1,537,297 at 90%).

Table 3: P-APD Funding Summary

	FFY 2011 Approved P-APD		
Activity Type	**State**	**Federal**	**Total**
State Employees	25,190	226,710	251,900
Contracted State Staff	23,760	213,840	237,600
Vendor (CSC)	196,372	1,767,348	1,963,720
Hardware & Software Costs	440	3,960	4,400
Direct Non-Personnel Costs (Rent, Supplies, Telephone, Travel)	19,510	75,590	95,100
Indirect Costs (Allocated Personnel, Furniture)	1,200	1,200	2,400
Total Project Costs	**$266,472**	**$2,288,648**	**$2,555,120**
	P-APD Expenditures to Date		
Activity Type	**State**	**Federal**	**Total**
State Employees	10,213	91,918	102,131
Contracted State Staff	50,804	457,239	508,043
Vendor (CSC)	22,707	204,362	227,069
Hardware & Software Costs	0	0	0
Direct Non-Personnel Costs (Rent, Supplies, Telephone, Travel)	977	8,792	9,769
Indirect Costs (Allocated Personnel, Furniture)	0	0	0
Total Project Costs	**$84,701**	**$762,311**	**$847,012**
	Remaining P-APD Funding		
Activity Type	**State**	**Federal**	**Total**
State Employees	14,977	134,792	149,769
Contracted State Staff	(27,044)	(243,399)	(270,443)
Vendor (CSC)	173,665	1,562,986	1,736,651
Hardware & Software Costs	440	3,960	4,400
Direct Non-Personnel Costs (Rent, Supplies, Telephone, Travel)	8,533	76,798	85,331
Indirect Costs (Allocated Personnel, Furniture)	240	2,160	2,400
Total Project Costs	**$170,811**	**$1,537,297**	**$1,708,108**

HIE Activity Summary

While a P-APD was not submitted for HIE activities, three prior HIE-specific I-APDs have been submitted by North Carolina and approved by CMS: HIE I-APD #20120113 (CMS approval letter dated 03012012), Version 1.0 of the HIE I-APD (CMS approval letter dated 06012017) and Version 2.0 (CMS approval letter dated 05212019).

Updates on the results of the activities under those documents are below.

2.1.2 Results and funding summary of the 2012 HIE I-APD

In HIE I-APD #20120113 (CMS approval letter dated 03012012), $1,359,237 ($1,223,313 @ 90% FFP) for FFY 2012, and $352,959 ($317,664 @ 90% FFP) for FFY 2013, were requested for Medicaid's proportional "fair share" of the design, development, testing and implementation of HIE core services in order to fully operationalize the statewide HIE to support NC providers in achieving their Stage 1 MU objectives. In this prior I-APD, core HIE services were broadly defined as the basic functions needed for information exchange, including applications for patient, provider and organizational identification; record locator services; messaging capabilities; and security functions. Specifically, the activities in the table below were projected and completed after the funding granted therein.

Table 4: HIE I-APD #20120113 Activities, Proposed Timelines, and Current Statuses

Activity	Timeline for Completion	Status
Design and development of core components:		
• **Service Orchestration Layer**	January 2012	Completed
• **Security Service**	January 2012	Completed
• **Patient Matching**	January 2012	Completed
• **Provider/Facility Directory**	January 2012	Completed
• **NwHIN Gateway (now eHealthExchange)**	January 2012	Completed
• **Secure Messaging (Direct)**	January 2012	Completed
Early Adopters Program:		
• **Two Qualified Organizations connected**	July 2012	Completed*
• **Deployment of targeted value-added services (now called features)**	July 2012	Completed
• **Technical onboarding processes validated**	July 2012	Completed

**Community Care of North Carolina was the first Qualified Organization to connect. The "QO" model was subsequently dissolved; however, since then many entities have connected, including large entities where one connection results in hundreds of connected facilities, as is the case today with the University of North Carolina Health Care System (one data feed, 600+ facilities).*

The above services, in addition to CCD exchange and access to a virtual consolidated patient record via the NC HealthConnex Clinical Portal, are operational and available to all HIE full participants.

Of note, HIE I-APD #20120113 set forth projections for provider connectivity (termed the "Early Adopters Program," per the above table), tied to what were then termed "Qualified Organizations" or "QOs." Then NC HIE's initial strategy to connect providers to statewide HIE services was to aggregate providers through QOs. Once designated, QOs would serve as gateways through which individuals, providers and organizations could access the NC HIE's HIE services. The QO concept assumed that, where a regional or health system HIE did not exist, local groups of physicians would form their own organizations to purchase HIE connections and administer the various local integrations and accompanying legal constructs to their constituent facilities. That model did not mature for multiple reasons, chief among them, the organizational/administrative burden and cost placed on independent physician communities, and the

immature technical readiness and demand for HIE at that time amongst both local communities and large health systems. In addition, many large North Carolina health systems, also known as integrated delivery networks, were still developing their own HIE and analytics strategies at that time, and thus hesitant to become QOs or be early adopters of state-level HIE.

North Carolina's state-designated HIE has since transitioned through two subsequent governance structures, and today, NC HealthConnex is administered and overseen by the North Carolina Health Information Exchange Authority (NC HIEA), a state agency created pursuant to 2015 additions to the North Carolina Statewide Health Information Exchange Act[5] that serves as North Carolina's State-Designated Entity for HIE. NC HealthConnex no longer uses the QO phrasing or concept, though it does seek to connect to as many cloud EHR, health system, HIE, or ACO-type "hubs" as possible, where a single connection provides HIE services to multiple providers/facilities.

The projections in HIE I-APD #20120113, targeting 23 QOs representing 21,799 physicians connected by Q4 of 2016, proved to be ambitious relative to market readiness. As of March 31, 2017, 133 organizations were connected to NC HealthConnex, representing 855 unique facilities; in addition, patient data available in NC HealthConnex represented care provided from 16,735 connected NC providers.

North Carolina closed out its HIE I-APD #20120113 account with CMS in 2013. *Table 5* below summarizes the State's use of these funds.

Table 5: HIE I-APD #20120113 Funding Status Updates

	HIE I-APD Approved Amount			HIE I-APD Expenditures to Date			Remaining HIE I-APD Funding		
	Federal Share (90%)	**State Share (10%)**	**Total Computable**	**Federal Share (90%)**	**State Share (10%)**	**Total Computable**	**Federal Share (90%)**	**State Share (10%)**	**Total Computable**
Contractor (NC HIE)	$1,540,977	$171,219	$1,712,196	$1,540,977	$171,219	$1,712,196	$0	$0	$0
Program Total	$1,540,977	$171,219	$1,712,196	$1,540,977	$171,219	$1,712,196	$0	$0	$0

2.1.3 Progress of Medicaid Provider Onboarding to HIE

In HIE I-APD Version 1.0 (CMS approval letter dated 06012017), $33,659,298 ($30,293,368 @ 90% FFP) for Q4 FFY 2017-Q3 FFY 2019 was requested for accelerating Medicaid provider onboarding to the HIE. This effort was broadly defined to include outreach activities; technical integrations, including public health interface testing and reporting; and provider training and workflow integration with the HIE.

HIE I-APD Version 2.0 (CMS approval letter dated 05212019) was requested to continue on-boarding Medicaid providers to NC HealthConnex and for associated activities.

Table 6 and *Table 7* below detail progress to date of Medicaid provider data connections (or interfaces) to NC HealthConnex (note, this is different from unique facilities, as explained below) and related activities as of May 2020, with discussion thereafter.

[5] NCSL 2015-241 Section 12A.5, as amended by NCSL 2015-264.

Table 6: HIE I-APD Version 2.0 Status of Medicaid Provider Data Connections (Interfaces) to NC HealthConnex

Connection Type	Projected by Q4 2021	Actual Live by 3/31/20
Health Systems, HIEs, & Hospitals	45	119
Ambulatory Facilities, Cloud EHR Roll-On & On-Premise EHR	1,750	5,352
Total Connections	**1,795**	**5,471**4
NCIR Connections	**450**	828
ELR Connections	84	11
Total Connections	**653**	839

Table 7: HIE I-APD Version 2.0 Activities, Proposed Timelines, and Interim Statuses

Activity	Start Date	End Date	Status
Recruit and train expanded NC HIEA staff	3/1/16	Ongoing	Ongoing
Continue NC HealthConnex outreach campaign	7/1/16	6/30/21	Ongoing
• Create and send periodic (approximately 1 every 2 months) newsletter to stakeholders and participants	7/1/16	N/A	Ongoing
• Finalize 2019 calendar of events/speaking engagements	1/1/19	4/1/19	Completed
• Engage EHR vendors serving Medicaid providers	2/1/17	N/A	Ongoing
• Distribute periodic updates through partner organization newsletters and other communications	1/1/17	N/A	Ongoing
• Finalize 2020 calendar of events/speaking engagements	1/1/20	4/1/20	Completed
• Finalize 2021 calendar of events/speaking engagements	1/1/21	4/1/21	Not yet started
Expand and Enhance NC HealthConnex training program	1/1/19	9/30/21	In Progress
• Improve upon/create additional video modules for using NC HealthConnex via Clinical Portal and visually integrated EHRs	7/1/19	6/30/20	In-progress
• Create video modules for using the NCIR functionality via the Clinical Portal and visually integrated EHRs	7/1/19	6/30/20	In progress
• With NC Medicaid and NC AHEC, create additional media on meeting PI requirements with NC HealthConnex	7/1/19	12/31/20	In progress
• Launch NC AHEC-NC HealthConnex training help desk/call center	7/1/19	12/31/19	Completed
• Launch data quality participant review with NC AHEC	7/1/19	12/31/20	In progress*
Connect signed participants to NC HealthConnex and new features	3/1/12	N/A	Ongoing
Finalize 2020 provider pipelines for public health onboarding (NCIR, ELR, SLPH)	10/1/19	12/31/19	Completed
Enhancements to Support Medicaid AMHs: FHIR Enablement	4/1/19	1/31/21	In progress
Enhancements to Support Medicaid AMHs: Consolidated CCD	4/1/19	6/30/20	In progress
Enhancements to Support Medicaid AMHs: NC*Notify Release 3.0	4/1/19	5/31/20**	In progress**
Enhancements to Support Medicaid AMHs: NC*Notify Release 4.0	11/1/19	10/31/20	Not yet started

Public Health Connectivity: State Lab Integration and Initial Health System/Hospital and Ambulatory Connections	3/1/20	3/1/21	In progress

*NC HIEA has re-evaluated its strategy around data quality as part of its continuing quality improvement process and has developed a more impactful data quality plan that is needed to make the desired impact and provide NC Medicaid and stakeholders with more accurate and reliable information. This improved plan will be submitted to CMS in the near future as part of NC HIEA's IAPD-U.

**NC Notify Version 3 (V3) is planned to go live on May 16, 2020 and Version 3+ (plus) is planned to go live on or before May 31, 2020.

†***Note that much of the proposed training program has been delayed due to state staffing issues and under-budgeting in this category. To complete these activities, North Carolina is collaborating with the NC Area Health Education Centers (AHEC), the state's former ONC Regional Extension Center grantee and current NC Medicaid MU Technical Assistance provider.***

Note that while connections figures in the table above lag behind projections, North Carolina exceeded its two-year goal of connecting 4,000+ facilities by June 30, 2019, by building fewer connections resulting in greater overall impact. That is, the NC HIEA's initial focus has been to connect hubs and health systems that only incur one "integration" connection federal/state charge but result in tens or hundreds of connected facilities.

As of June 20, 2017—immediately prior to the beginning of approved funding under HIE I-APD Version 1.0 (July 1, 2017)—the NC HIEA had 884 facilities live and sending data to NC HealthConnex. As of December 31, 2018, that figure is 4,502, with over 3,500 more (and growing rapidly) having signed participation agreements and in the onboarding process—hence the need for continued funding approved May 21, 2019 via the HIE I-APDU Version 2.0. As of March 31, 2020, the figure has grown to 5,352 live in production, with over 3,599 unique facilities having signed participation agreements and in the onboarding process. This represents a 500 percent increase in connectivity to NC HealthConnex since the outset of the federal financial participation was approved. However, in order to complete its goal of statewide connectivity by Q4 FFY 21, the NC HIEA plans to make an IAPD-U request to CMS for additional resources to meet its integration connection targets and encourage increased usage and adoption of EHR technology and HIE. NC HIEA has had to expend more time and resources connecting independent and smaller Medicaid providers that are subject to the 2019-2021 state mandate deadlines as these typically require "one-off" integrations. A new challenge to meeting connections goals is the COVID-19 pandemic. Many providers' priorities have shifted, and they are now focused on related activities, have temporarily closed, have had staffing cuts, and other financial challenges.

Recognizing that these challenges pose significant risk to its connection goals, the NC HIEA has been actively analyzing its current operating model for onboarding providers and has found several avenues to decrease the time it takes to onboard providers and additional proactive planning it can take with providers to adequately prepare them to connect when they are able to do so to limit delays. To address these needs and meet its onboarding goals prior to the cessation of HITECH funding in 2021, the NC HIEA has had a series of in-depth strategy sessions with its vendor partner to outline a revised strategy for meeting IAPD integration goals and maximizing the usage of this important federal investment in North Carolina. The resulting strategy from these meetings is currently being finalized to ensure it will have the maximum impact needed to reach these critical goals.

NC HIEA does anticipate that additional HITECH funding from what was approved by CMS as per the May 21, 2019 letter, will be needed and plans to submit an IAPD-U to CMS in the near future which shall detail

this enhanced strategy for ramping up progress on this critical initiative to provide the user base necessary to make NC HealthConnex as impactful as possible for the Medicaid health care community as well as an effective database to be used for NC DHHS quality and performance measures in the future.

An additional area of connections that has lagged, is in public health connectivity. The NC HIEA was successful in building out its public health connectivity resources in 2019. However, as a result of changes to the onboarding process/technical readiness for the NCIR as directed by the Division of Public Health, delays in onboarding continue for this service due to EHR vendors not being "technically ready" to meet the NCIR integration requirements. The NC HIEA public health team work closely with the NCIR team to look for ways to improve the program and drive connectivity. As of March 2020, bi-directional interfaces are live with 30 facilities for automated reporting and query capability; three facilities are in active onboarding, and the HIEA public health resources are in the process of scheduling onboarding for 46 facilities for Q2 2020. There are an additional 600+ facilities in queue to onboard. The ELR uni-directional interface is live for 11 hospitals reporting daily files to the Division of Public Health with an additional three hospitals in active onboarding.

Most activities were completed or are progressing as anticipated in the HIE I-APD Version 1.0, except for building out a robust NC HealthConnex training program. To this end, an improved plan and additional funding were proposed in *Section III* of the HIE I-APDU Version 2.0 and approved May 21, 2019. Status of the training program is addressed in Section 3.1.9.

The table below summarizes the State's use of funds approved in HIE I-APD Version 2.0 as of March 31, 2020. North Carolina does have significant monies unspent for the currently approved scope of work, due to the reasons described above (efficiency of hub and health system integrations, resulting in lower draw-down per connection, and delays in public health onboarding due to dependencies at the NC DPH).

Table 8: HIE I-APD Version 2.0 Currently Approved Funding Expenditures

HITECH IAPD Funding Expenditures - As of March 31, 2020								
	HIE I-APD V 2.0 Approved Amounts			HIE I-APD Expenditures as of Mar 31, 2020			Remaining HIE I-APD Funding	
	Federal Share (90%)	State Share (10%)	Total Computable	Federal Share (90%)	State Share (10%)	Total Computable	Federal Share (90%)	State Share (10%)
State Personnel	$2,646,718	$294,080	$2,940,798	$1,070,804	$356,622	$1,427,426	$1,575,914	($62,542)
State Expenses (including Travel)	$272,250	$30,250	$302,500	$36,632	$1,756	$38,388	$235,618	$28,494
HIE Technology Contractor (SAS)	$27,374,400	$3,041,600	$30,416,000	$4,121,655	$438,750	$4,560,405	$23,252,745	$2,602,850
Program Total	$30,293,368	$3,365,930	$33,659,298	$5,229,091	$416,960	$5,646,051	$25,064,277	$2,948,970

3 Statement of Needs and Objectives

NC Medicaid EHR Incentive Program

3.1.1 NC-MIPS Overview

Providers attest for the NC Medicaid EHR Incentive Program through the NC Medicaid EHR Incentive Payment System (NC-MIPS). NC-MIPS was built in 2010-2011 and managed and housed at the Office of Medicaid Management Information Systems Services. North Carolina implemented a replacement MMIS

called the NC Transparent Reporting, Accounting, Collaboration, and Knowledge Management system (NCTracks). NCTracks went live in July 2013.

In 2013, NC-MIPS moved to state servers to achieve cost savings. Program management—including policy, outreach, monitoring, and oversight—is provided by the NC Office of Health Information Technology (NC OHIT) with support from NC Medicaid Budget, Hearings, and DHHS IT staff. For more about the Program's organization, see S*ection C.1* in the NC SMHP. (Note: all SMHP references in this document refer to version 4.5 unless otherwise specified.) NC-MIPS is maintained in-house and accepted Program Year 2019 attestations for Stage 3 MU May 1, 2019 through April 30, 2020. NC-MIPS will accept Program Year 2020 attestations May 1, 2020 through April 30, 2021 and Program Year 2021 attestations May 3, 2021 through October 31, 2021.

3.1.2 New System Needs, Objectives, and Anticipated Benefits

The staff of the NC Medicaid EHR Incentive Program plans and executes NC-MIPS development and enhancement efforts. The objectives of the NC-MIPS development effort—present and future—include the following:

- Enhance NC-MIPS to quickly accommodate state and federal program changes (ongoing);
- Enhance NC-MIPS to accommodate pre- and post-payment attestation validation workflow documentation (ongoing);
- Enhance NC-MIPS2 database to accommodate communication with the CMS Registration & Attestation (R&A) System, and thus synced federal and state program databases (ongoing); and
- Continue to improve the system for optimal efficiency and cost containment (ongoing).

Tables within the NC-MIPS2 database were created to store data elements required for the registration, attestation, and incentive payment calculations, providing a complete audit trail of all activities. A Service Oriented Architecture (SOA) was used to build NC-MIPS, ensuring easy integration with NCID in 2013 and other state systems as needed.

Past and future benefits of this approach include:

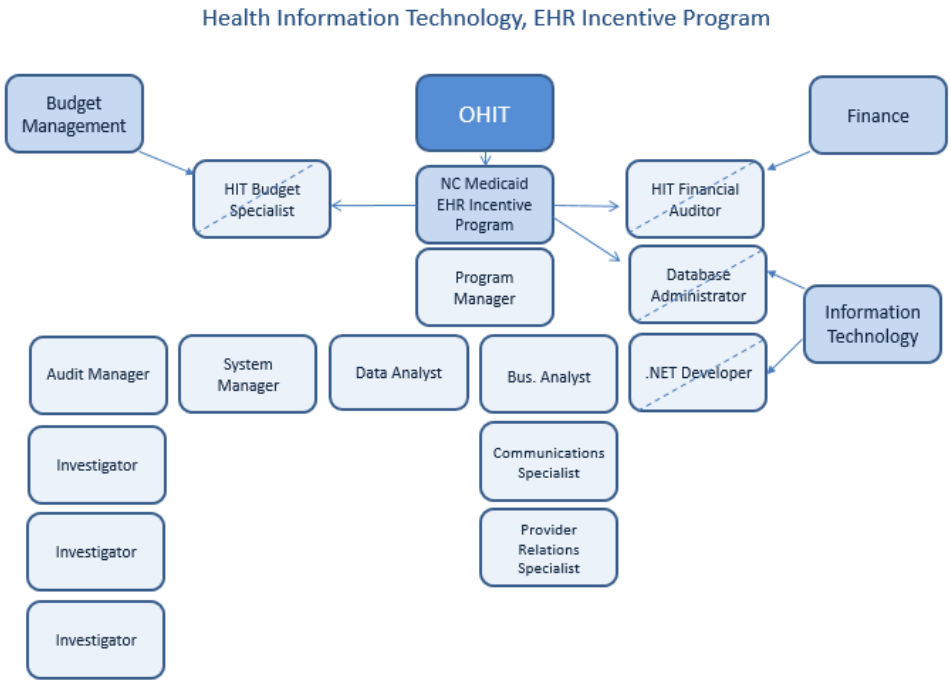
- A quick and flexible implementation of NC-MIPS (completed);
- Ability to meet an aggressive CMS testing schedule for the National Level Repository (NLR) interfaces (completed); and,
- Accelerated design, development, testing, and implementation by building the solution in overlapping iterative phases (ongoing).

For more on NC-MIPS activities, see *Section C.4* of the SMHP.

3.1.3 Program Management and Oversight Activities

As stated in the SMHP, the NC Medicaid EHR Incentive Program management and oversight, including policy and outreach around HIT efforts, is carried out by the NC Medicaid HIT Team in collaboration with various stakeholder organizations. For more information on the HIT Team structure and roles/responsibilities, see below.

Figure 1: Organizational Structure of the Medicaid Health IT Team



NC Office of Health Information Technology (OHIT) Director

Responsible for developing a state plan for implementing and ensuring compliance with national HIT standards and for the most efficient, effective, and widespread adoption of HIT; identifying available resources for the implementation, operation, and maintenance of HIT; and monitoring HIT efforts and initiatives in other states and replicating successful efforts and initiatives in North Carolina. Works closely with NC HIEA in coordinating efforts toward legislatively mandated connections.

Roles and Responsibilities of the Program team

All team staff time is dedicated to the NC Medicaid EHR Incentive Program, HIT projects described in the SMHP, and developing other HIT/HIE projects, e.g., emPOWER. Staff who contribute part-time complete timesheets to document accurate distribution of effort and funds. This timesheet data goes through a cost allocation program to charge the appropriate amount of payroll expenses to the correct cost centers. Where projects are eligible for various Federal Financial Participation (FFP) rates (i.e., 90 percent administrative, 100 percent incentive payments), this is specified in the last node of the cost center number such that the invoice reviewer codes the payment with the proper FFP funding.

Program Manager

Responsible for the overall planning, implementation, and management of the NC Medicaid EHR Incentive Program. Core responsibilities include: directing activities of the Program team toward federal EHR Incentive Program goals, ensuring program compliance, and acting as the Program contact for CMS and other states.

Data Analyst

Designs and leads data analytics for the NC Medicaid EHR Incentive Program, including NC-MIPS metrics reporting, MMIS data warehouse research and reporting, and other HIT initiatives such as emPOWER. Tracks and analyzes program performance metrics.

Communication Specialist

Crafts and executes the Communication Plan for the NC Medicaid EHR Incentive Program, including messaging, provider outreach, program website, articles, bulletins, and communication with key stakeholders and partners. Assists all other roles with external communication such as correspondence templates and training and internal documentation review. As of May 2020, this position is vacant with duties backfilled by Business Analyst.

Systems Manager

Responsible for tracking maintenance and enhancement projects for NC-MIPS and AVP, QA testing, facilitating communication between Program team and Information Technology Division staff, managing server maintenance and upgrade projects, and maintaining documentation related to program's servers, hardware, and software.

Senior .NET Developer

Serves as the lead technical resource for the NC Medicaid EHR Incentive Program in support of all maintenance and enhancement development for NC-MIPS and the attestation validation portal (AVP) including software building, release management, and developer testing including source code management. Since May 2019, the .NET developer has been dividing time between the Program and the Information Technology Division.

Business Analyst

Responsible for creating all documentation used by developers for maintenance and enhancement of NC-MIPS and AVP including responding to CMS changes, updating system design and user documentation, and creating test cases and performing QA testing. Develops, updates, and maintains requirements and documentation for HIT initiatives, including emPOWER.

Budget Specialist

Part-time employee; manages the budget for the NC Medicaid EHR Incentive Program, monitors accuracy of incentive payments, provides regular financial reporting and forecasting to program manager, and conducts all CMS financial reporting related to the Program, including CMS 37 and 64 reports.

Financial Auditor

Part-time employee; serves as the subject matter expert for hospital payment calculations for the NC Medicaid EHR Incentive Program. Calculates payments for hospitals, creates policy around NC-specific hospital eligibility and attestation requirements, and conducts outreach with hospitals as necessary.

Provider Relations Specialist

Heads up the help desk for the NC Medicaid EHR Incentive Program. Responsible for overseeing the pre-payment validation process, including eligibility determination, provider outreach efforts, denials, and eligibility appeals and hearings. As of May 2020, this position is vacant with duties backfilled by Audit Manager and Investigators.

Audit Manager

Heads up the team of investigators who conduct pre- and post-payment validations and audits. Responsible for risk analysis, audit scheduling, Audit Strategy, representing NC Medicaid at audit-related meetings and hearings, and conducting validations and audits with the investigators. Leads help desk and manages AVP.

Investigators

Conduct pre- and post-payment validations for professionals and pre-payment processes for hospitals; oversee recoupment of payment in the case of adverse post-payment review findings. Assists Audit Manager with help desk and AVP. Two investigator positions vacant as of May 2020.

Activities covered in this I-APDU for planning, support, and continued definition of the State's ongoing HIT efforts include:

- Updates to the SMHP and I-APD for scope and requirement changes and for subsequent phases, to include meaningful use capture and verification;
- Business process modeling for all phases of the project including provider support for registration and attestation, quality assurance, audit, appeals, payment processing, budget preparation and reporting, clinical oversight, and meaningful use data analysis;
- Support of the Program Help Desk and provider outreach efforts;
- Planning and execution by DHHS of a state-level HIT/HIE conference and/or sponsorship of external statewide HIT conference;
- Hosting various HIT stakeholder meetings and workgroups;
- Continuous improvement of the quality assurance process used to validate incentive payments pre-payment;
- Program Integrity audits covering verification of eligibility, attestation data, and adopt, implement, or upgrade (A/I/U) and meaningful use requirements;
- Design and implementation of the appeals process for denial of incentive payments;
- Coordination with the NC HIEA to develop plans to achieve goals such as:
    - Ramp up connectivity between Medicaid providers and the NC HIE;
    - Capture and report clinical quality measure data to support incentive payment eligibility;
    - Design, develop, and implement essential public health interfaces to the NC HIE; and,
- Use of clinical data obtained through EHRs to impact Medicaid policy and patient care, including participation in the Medicaid Evidence-based Decision Project (MED Project) and the Drug Effectiveness Review Project (DERP); and,
- Conducting follow-up environmental scans to track EHR adoption and provider experiences statewide.

For more on HIT program activities, see *Section C* of the SMHP.

Updates to the SMHP and this I-APD will occur annually or more often if needed.

Enabling Electronic Test Orders and Results (ETOR) with the State Laboratory of Public Health

The mission of the North Carolina State Laboratory of Public Health (NC SLPH) is to "provide certain medical and environmental laboratory services (testing, consultation and training) to public and private health provider organizations responsible for the promotion, protection, and assurance of the health of

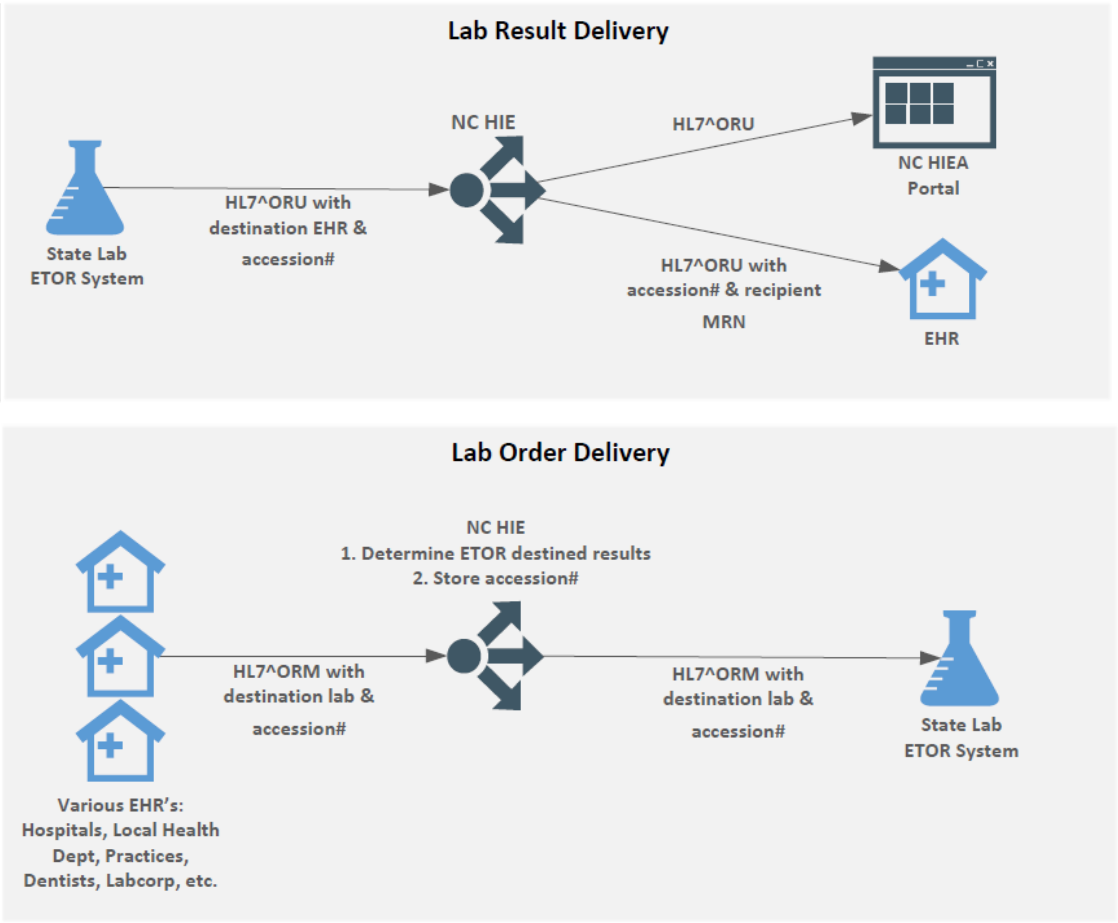
North Carolina citizens."[6] Among its services are myriad environmental testing services (water systems, dairies, etc.); testing for biological and chemical terrorism agents; microbiology and virology/serology services for various specimens; testing for newborn and prenatal screenings, infant blood lead levels, and others. Health systems, pediatric and primary care providers, and many other health care providers rely on the services of the NC SLPH to remain compliant with state reporting laws and inform their daily patient care.

North Carolina has a unique opportunity in its health information exchange, NC HealthConnex, to leverage existing interfaces with provider EMRs (Electronic Medical Record systems), which by state law will eventually include approximately 98% of North Carolina health care providers, to serve as a gateway to the NC SLPH laboratory information management system (StarLIMS). Through a bidirectional interface between the two systems, efficiencies can be introduced into the test order and results process by allowing health care providers in North Carolina to be able to submit electronic lab orders and receive results from the SLPH without leaving their EMRs—a marked improvement from today's paper- and portal-based process. In addition, North Carolina Session Law 2019-23 HB70 mandates that the NC SLPH shall begin submitting demographic and clinical data to NC HIEA's, NC HealthConnex, by June 1, 2021.

Per guidance in State Medicaid Director Letter #16-003 pertaining to available HITECH funding for interoperability and health information exchange (HIE) architecture, connecting public health systems to HIEs, and assisting EPs and EHs with meeting specific PI objectives, North Carolina requests federal financial participation to assist with the design, development, and implementation of the NC HealthConnex-NC SLPH interface, and subsequent onboarding of Medicaid providers to the new service. Specifically, this new HIE feature will allow EPs to leverage their existing NC HealthConnex interface to help meet PI Objective 4 Measure 2, Computerized Order Entry of ordered labs. The figure below depicts the proposed information flow for lab result delivery into EHRs and the ordering process to NC SLPH.

[6] https://slph.ncpublichealth.com/

Figure 2: Proposed Information Flow between the NC SLPH, NC HealthConnex and Healthcare Organization



NC SLPH currently receives around 800,000 mailed in paper-based, standardized laboratory test requisitions accompanied by specimens annually. NC SLPH performs 125 clinical laboratory tests for public and private health care providers.

Description of Current Business Process:

- Every test order requisition is paper-based, and the test order form data and specimen data are entered manually into the StarLIMS system. Once test order results are generated, those are automatically updated in the StarLIMS system via interfaces with testing equipment.
- The test results are then mailed to all the submitters. All test results are also posted in the DPH-developed web portal, Clinical and Environmental Lab Results (CELR). CELR presents test result data from the StarLIMS database.

Issues related to manual processes:

- Accuracy of data is compromised due to manual transcription of test order and demographic data when received at the laboratory.
- Wrong test orders are created due to human misinterpretation of the information written in the form. The testing process carries on and the test results are released to the submitter. When the submitter raises a complaint that the wrong test was performed, NC SLPH must perform the testing

again and issue a corrected report.

- Demographic information on test order forms is either not provided or misinterpreted when being entered into StarLIMS.
- Incorrect demographic information delays the publishing of test results until the correct demographic information is available.
- Inability to provide electronic test reports to the health care submitters negatively impacts patient care due to the delays in receiving paper-based reports via the mail.

Initiative Description

NCSLPH is contracting with the Association of Public Health Laboratories (APHL) to implement their ETOR solution. APHL is a non-profit organization, of which SLPH is a member. APHL has existing contractual relationships with the Centers for Disease Control and Prevention (CDC) and with states, including North Carolina. The APHL ETOR solution supports meaningful use. Adoption is encouraged by the CDC and the HHS Office of the National Coordinator (ONC). ONC is supporting this effort through the Health Information Technology for Economic and Clinical Health Act (HITECH).

The comprehensive ETOR solution will combine existing processes and help eliminate day to day use of paper forms and help improve the accuracy of information. Additionally, the ETOR solution will help enforce the collection of information that could be utilized in addressing Insurance/Grant/Individual/Program/Client/etc. billing (revenue recovery) processes. The high-level capabilities that follow are the primary standard of care for Health Providers to enable more timely and accurate communications:

- A web portal for the environmental lab submitters and the clinical lab submitters that do not have EMR systems to submit their electronic test orders directly to the NC SLPH and view electronic test reports.
- An integration suite for the NC SLPH to integrate with NC HealthConnex and any external EMR systems (i.e., for those clinical providers that are not participating in NC HealthConnex) to transmit test orders and test results.

NC has an approved project for implementation of the APHL ETOR solution. The project will implement ETOR as a Software as a Service Solution (SaaS). APHL's ETOR solution is built on their Informatics Messaging Services (AIMS) platform. Currently SLPH uses AIMS to deliver Health Level 7 (HL7) data to the CDC on influenza, rabies, and other disorders. AIMS is used by many other states for exchanging encrypted clinical data with CDC and each other for disease surveillance. The ETOR solution will facilitate data exchange and support the State's ability during health crises such as COVID-19.

NC is one of the participants in the first cohort to implement APHL's ETOR Portal for COVID-19 only. We are actively working to configure the portal to allow COVID-19 test orders and results. NC is testing the ETOR solution in our Development Environment for COVID-19 only. ETOR is a critical component of the modern infrastructure in use by health organizations today. The implementation of ETOR will help with sharing of information among partners and will improve the ability to respond, monitor, and communicate during public health crises. Following the COVID-19 ETOR Portal effort, we will implement the remaining functionality and interfaces.

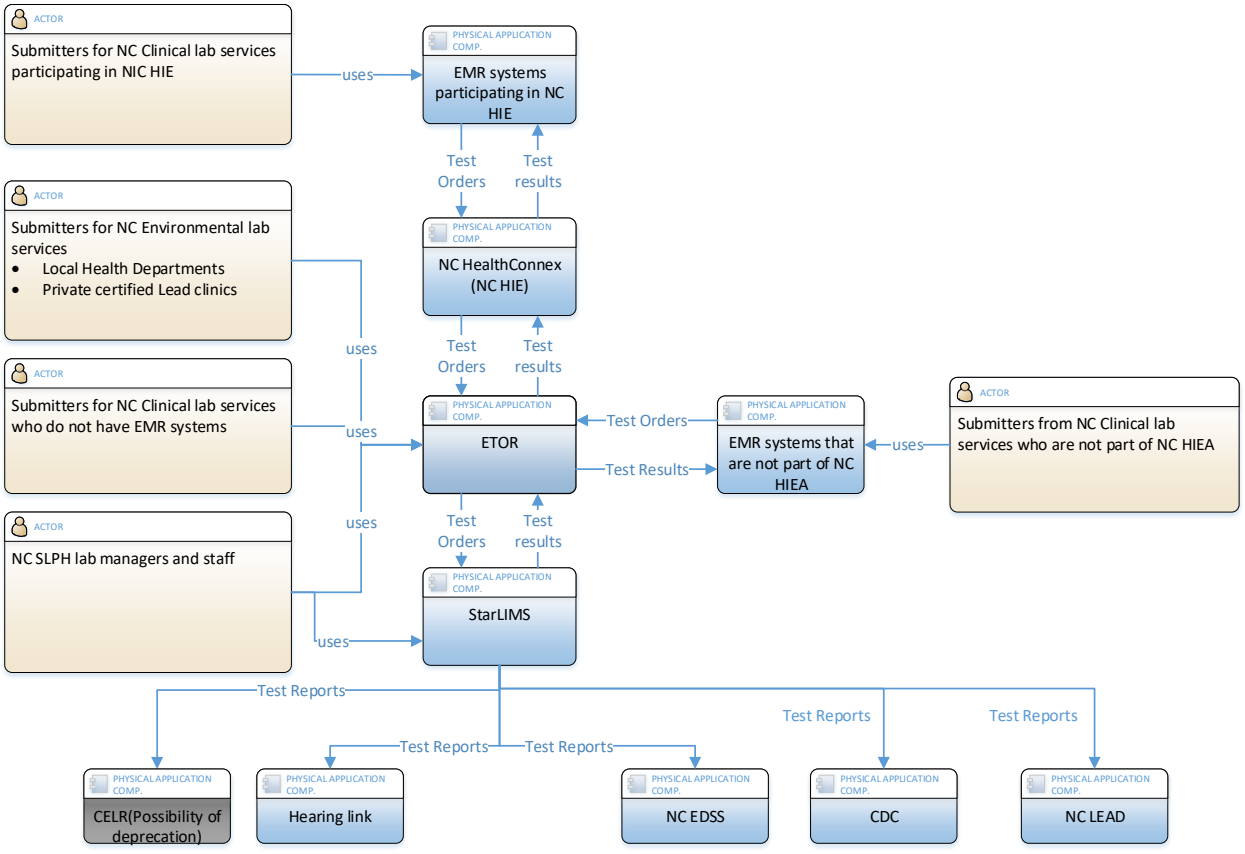
There are five main deliverables for the ETOR implementation effort:

1. Implementation of the ETOR Lab Web Portal for emergency response to COVID-19, allowing test ordering and result reporting electronically.
2. An interface with the NC Health Information Exchange (NCHIE) to transmit all results by June 1, 2021 from StarLIMS to NCHIE.
3. An interface with the NC Health Information Exchange to receive test orders from full NCHIE participating submitters through the ETOR solution into StarLIMS.
4. An interface with the top two EHRs in use by the local health departments for both orders and results. These local health departments will interface directly with the ETOR solution, independent of the NCHIE.

A laboratory web portal for the environmental and clinical lab submitters that do not have EMR systems to submit their electronic test orders directly through the ETOR to StarLIMS and view electronic test reports through the laboratory web portal.

The ETOR Future State Context Diagram below gives an overview of the external entities (i.e., people, division, system) that will interact with the future solution.

Figure 3: ETOR Future State Context Diagram



Costs for this project ($630,000 and $76,500 in 90% FFP for FFY 2020 and 2021 respectively) are included in Table 19 under Hardware and Software Costs and in the total new request for this I-APDU.

Staffing Approach:

The APHL's SaaS vendor will be contracted to configure and implement the solution. However, necessary NC SLPH staff must be significantly involved during all phases of the project to:

- Communicate business goals and requirements to vendor.
- Provide ongoing project oversight and guidance.
- Integrate the solution with StarLIMS.
- Execute user acceptance testing between StarLIMS, the Solution, NC HealthConnex, and healthcare providers.
- Collaborate with vendor to develop trainings, project management approaches, documentation, communication, implementation, and roll-out plans for the various Phases.

The effort will require contracted staff to include two application system specialists, and one medical lab specialist. The State has assigned a permanent employee to act as the Project Manager. For contract employees, duties are as follows:

Application Systems Specialist: To assist the vendor with integrating the ETOR solution with StarLIMS by making any necessary configuration changes needed within the laboratory information management system. To configure and test the HL7 messages. To work with external partners to develop the interfaces with ETOR, test the interfaces and coordinate with the vendor to ensure functionality is accurate.

Medical Lab Specialist: To act as the clinical laboratory testing subject matter expert and liaison who will assist the Vendor and IT staff with any necessary laboratory testing workflow adjustments that may be required due to the shift from paper-based to electronic test orders and results.

Total funding approved in NC-2019-07-09-HITECH-IAPD for ETOR work was $987,552 in 90% FFP for FFY 2020 and $434,052 in 90% FFP for FFY 2021. No changes in funding are requested in this I APDU.

Patient Unified Lookup System (PULSE)

The Sequoia Project, in support of the Centers for Medicare & Medicaid Services (CMS), is developing a nationwide deployment plan for the health IT disaster response platform known as the Patient Unified Lookup System for Emergencies (PULSE). North Carolina is requesting HITECH funding for Q4 FFY2020 and for FFY 2021 for PULSE implementation to participate in this CMS-led effort.

PULSE Enterprise Edition (EE) and PULSE COVID – DHSR Emergency Management

During the most recent hurricane response, North Carolina's State Medical Response System assisted in Field Medical Stations providing emergency healthcare for counties whose community healthcare system was interrupted or disrupted due to the storm. Approximately 1100 people were cared for in these field medical stations. Additionally, over 300 people were provided care in medical support shelters and over 20,000 people were sheltered across the state. Providing care in a disaster response such as hurricane response creates common healthcare concerns related to medication refills, lack of awareness of underlying medical conditions and acute stress due to the disaster itself that cannot be responded to in the best manner due to lack of access to patient clinical information. Currently our state medical response system relies on patient disclosure and knowledge of their medical history and medication needs to respond to potential health needs. DHSR Emergency Management is requesting HITECH funding for acquisition and implementation of the PULSE EE product to enable and enhance the ability to create a proactive response to fill the gap in current ability to provide limited access to patient clinical information during hurricanes and other disasters such as responding to pandemics (COVID-19), tornadoes, floods, and other unplanned events.

COVID-19 is the most recent example of DHSR Emergency Management preparations to provide overflow patient capacity and load in alternative healthcare facilities. As part of the COVID-19 emergency response DHSR Emergency Management requested and received approval to use PULSE COVID to provide limited access to patient clinical information at specific emergency response facilities. PULSE COVID is a free-use limited-time offering created specifically for COVID-19 as part of the Sequoia Project and Audacious Inquiry, the developer of PULSE EE. The limited use case for COVID-19 provided by Pulse COVID will be included in the PULSE EE product. Subscribers to PULSE EE will have access to the pandemic response use case and other disaster response use cases. Non-subscribers of PULSE EE will be required to become paid subscribers of PULSE COVID beginning in August 2020 through December 2020 when PULSE COVID will be removed from the marketplace.

The Sequoia Project and Audacious Inquiry are partnering to develop multiple marketplace initiatives to enable a variety of HITECH initiatives.

Audacious Inquiry is offering limited-time Subscription packages for the upcoming release of PULSE EE during the current calendar year of 2020 for $200,000. The Subscriptions include Implementation services and setup of a client-specific cloud-based solution with connections to the eHealth exchange national network. Matching funds are available as part of the HITECH initiative, providing 90/10 funding for the initial subscription.

Final pricing for annual fees required with subscriptions has not been established; however, current estimates are $600,000 for PULSE EE and $100,000 for PULSE CENSUS. PULSE CENSUS is included as part of PULSE EE, but DHSR Emergency Management has not determined whether those features will be necessary at this time. PULSE EE and PULSE CENSUS will include additional features that are downstream from DHSR Emergency Management's initial disaster response scenarios but offer potential enabling solutions for other DHHS solution delivery.

PULSE supports Medicaid providers and others in providing coordinated care to Medicaid beneficiaries who've been displaced from their regular providers during a crisis. Due to the uncertain nature of a system such as this with response varying with emergencies, it would be difficult at this time to reliably predict the percentages of Medicaid providers and Medicaid beneficiaries impacted. For these reasons, North Carolina believes that no cost allocation across other funding sources for PULSE is warranted at this time; however, this will be reevaluated as data is collected after implementation.

For FFY2020 Q4 through FFY 2021, we are requesting 90 percent FFP $249,653 for staff, $450,000 for equipment, and $697,500 for contracts.

PDMP Planning is underway for the transfer of PULSE expenses from HITECH to MES in FFY 2022, with anticipated inclusion in the MES I-APDU in early 2021.

Approved North Carolina HIT Projects and Anticipated Benefits

3.1.4 A New State HIT Website

NC DHHS has created a statewide HIT website to provide information on meaningful use and HIT in public health. The vision for the site is to show the progress of HIT activities within the state. The site will be designed as a central point of contact for HIT, with project summaries and links to serve as a reference for parties interested in HIT and HITECH progress in NC. There are currently no associated costs for which we are requesting additional HITECH funds.

3.1.5 MU[2] and the North Carolina Regional Extension Center

Completing Modified Stage 2 in 2018 and moving forward with Stage 3 of Meaningful Use, North Carolina recognizes that HITECH is about much more than just using certified EHR technology to collect and submit clinical data; it's about improving health outcomes. It is with this goal in mind that North Carolina proposes to leverage the North Carolina Area Health Education Centers' (NC AHEC) Regional Extension Center (REC) existing infrastructure and strong history of adult learning to continue the work done in Stage 1 and Stage 2 into Stage 3 of Meaningful Use, promoting the electronic exchange of health information to improve the quality and lower the cost of health care in North Carolina. NC believes these projects will approximate the federal objective of making "meaningful use of Meaningful Use," or MU[2].

The objectives tied to these initiatives are as follows:

- Help NC eligible professionals with Stage 3 of Meaningful Use in Program Year 2019 and beyond;
- Expand the reach of AHEC consultants beyond primary care providers to community-based specialists;
- Continue to promote patient engagement through use of electronic patient portals;
- Remove vendor-specific barriers to the achievement of all stages of Meaningful Use;

NC Medicaid believes the benefits of these initiatives are substantial and requested funding for participation in these projects in the amount of $2,071,842 in 90 percent federal funding for FFY 2019 and $2,071,842 in 90 percent federal funding for FFY 2020. The total cost for FFYs 2019 and 2020 approved in a CMS letter dated October 3, 2018, including 10 percent state match, is $4,604,094. This update requests $1,087,560 in 90 percent federal funding for FFY 2021.

For more detail on each objective, see *Section B.5.1* of the SMHP.

3.1.6 HITECH Safety Net Providers and the North Carolina Office of Rural Health

The North Carolina Office of Rural Health (ORH) supports equitable access to health in rural and underserved communities. To achieve its mission, ORH works collaboratively to provide funding, training, and technical assistance for high quality, innovative, accessible, cost effective services that support the maintenance and growth of the State's safety net and rural communities. ORH heard the call to action of the Office of the National Coordinator for Health IT (ONC) regarding the Meaningful Use Challenge in critical access and small rural hospitals. Together with the NC Area Health Education Centers (AHEC), ORH has provided the expertise and leadership essential for realizing ONC's goal of Promoting Interoperability.

Now, NC Medicaid has approved funding six (6) permanent FTE positions within the ORH: one (1) Rural HIT Program Manager, one (1) Rural Telehealth Specialist, three (3) Rural HIT Specialists, and one (1) Database Administrator to address the needs of rural safety net providers in NC. The Rural Health IT Team continues to:

- Assess, inventory, anticipate, and prioritize safety net providers' technical, operational, organizational, clinical, hardware, applications, and funding HIT needs; identify services and resources for resolving any HIT gaps and build out needed infrastructure, while keeping patient information protected and secure,
- Link multiple efforts such as broad band, Meaningful Use, HIE connectivity and use, development of quality dashboards, building infrastructure to use telehealth to expand access to key missing services (i.e. eye exams for rural diabetic patients, telepsychiatry, remote patient monitoring,

etc.) and collaborate with key business partners to support the Department's programs and new Medicaid Transformation initiatives

- Contribute to the development of expert knowledge, frameworks, and strategies for quality improvement (QI), analytics, and reporting
- Plan, conduct, arrange, and participate in trainings/webinars and/or identify qualified trainers for key topics (e.g., QI, EHR, MU, MACRA, MIPS, APM, ACO, NC HIE, NC Care360 - new Social Determinants of Health resource platform, and maximizing the use of clinical and claims data to improve the quality of patient care and population health)
- Assist safety net providers in attesting to Meaningful Use and/or other value-based care initiatives such as promoting interoperability
- When appropriate, link resources and assist with PCMH or other quality certifications
- Oversee, track, and monitor safety net HIEA Participation Agreements
- Serve as the subject matter expert and point of contact for telehealth efforts across North Carolina
- Collaborate with key stakeholders such as the NC Broadband Infrastructure Office and others on telehealth and broadband efforts
- As part of North Carolina's approved 1115 Medicaid Waiver to transform its current Medicaid delivery system ("Medicaid Transformation"), ORH has identified the opportunity to support a statewide Community Health Worker Initiative and partner with a state university to create a data repository for Community Health Workers (CHWs) data. The goal of the data repository is to establish and assess the effectiveness of CHW training and the CHWs role in improving the health outcomes of Medicaid beneficiaries. The team is in the process of working with state IT and procurement staff to develop an agreement with the university. Some HIE data may be used to track performance measures, health outcomes, and other related clinical data.

ORH has committed to providing the 10 percent state match required by the acceptance of 90 percent Federal Financial Participation (FFP). To meet the requirements above, the Rural HIT Team total budget includes costs for salary and benefit package (benefits calculated at 33 percent, staff travel, training events and materials, equipment, contractual support, software, and supplies totaling $1,454,881 ($1,309,393 FFP + $145,488) for FFY 2021. The total funding request approved October 3, 2018 for FFYs 2019-2020 was $2,909,762 ($2,618,785 FFP + $290,976 ORH match), including $1,454,881 ($1,309,393 FFP + $145,488) for FFY 2019 and $1,454,881 ($1,309,393 FFP + $145,488) for FFY 2020. This update requests no changes to amounts for FFY 2021 that were approved July 19, 2019.

More detail on the role that these six ORH staff play in engaging rural providers in HIT efforts is provided in the SMHP. Due to HR delays in creating and filling state positions, ORH's actual costs have been lower than the funding requested. In 2017, ORH was able to fill the first position. Three Rural HIT Specialist positions were filled in 2018 and the Telehealth Specialist was filled in April 2019. ORH continues to work with OSHR to create and fill the Database Administrator position. Associated costs can be found under line item "ORH" in the funding summary tables.

3.1.7 MU^2 and the Medicaid Evidence-Based Decision and Drug Effectiveness Review Projects

In FFYs 2019-2021, NC Medicaid continues to participate in two initiatives coordinated by the Oregon Health Sciences University's Center for Evidence-based Policy. These are the Medicaid Evidence-based Decision Project (MED Project) and the Drug Effectiveness Review Project (DERP). The MED Project is a collaboration of 18 state agencies (Alabama, Alaska, Arkansas, Colorado, Louisiana, Michigan, Minnesota,

Missouri, New York, North Carolina, Ohio, Oregon, Rhode Island, Tennessee, Texas, Washington, West Virginia, and Wisconsin), primarily Medicaid, with a mission to provide policy-makers the tools and resources to make evidence-based decisions. The DERP Project is a collaborative of state Medicaid and public pharmacy programs that have joined forces to provide concise, comparative, evidence-based products that assist policymakers and other decision-makers facing difficult drug coverage decisions.

DERP is nationally recognized for its clinical objectivity and high-quality research. It focuses on specialty and other high-impact drugs, particularly those that have potential to change clinical practice. DERP reports evaluate efficacy, effectiveness and safety of drugs to ultimately help improve patient safety and quality of care while helping government programs contain exploding costs for new therapies. Many of these reports and activities dovetail with the clinical quality measures on which EPs and EHs must report for demonstrating Meaningful Use under the Medicaid EHR Incentive Program. Expanding availability of evidence-based resources provides North Carolina more robust sources of data and information on which to base sound decision-making around best practices.

NC Medicaid has participated for seven years, 2014 through 2020, and believes the benefits of both MED and DERP are substantial. In a letter dated October 3, 2018, CMS approved $95,500 for DERP and $153,000 for MED VI for a total of $248,500 ($223,650 FFP) for 2019 and $105,050 for DERP and $168,300 for MED VI for a total of$273,350 ($246,015 FFP) in 2020. This update requests $225,450 in FFP for FFY 2021.

For more detail on MED/DERP, see *Section B.5.3* of the SMHP.

3.1.8 Continued Medicaid Provider Onboarding to NC HealthConnex

Consistent with CMS guidance offered in its August 17, 2010, State Medicaid Director (SMD) letter (SMD# 10-016), its May 18, 2011, SMD letter (SMD# 11-004), its February 29, 2016, SMD letter (SMD# 16-003) and its June 11, 2018, SMD letter (SMD# 18-006), NC Medicaid recognizes HIE as a critical element to the meaningful use of certified EHR technology and implementation of delivery system reforms being pursued by CMS. Studies affirm the benefits of HIE in improvements in the efficiency and effectiveness of care.[7]

However, the benefits of an HIE cannot be realized until providers connect to exchanges, access and share data, and integrate the information into their workflow and care delivery processes. Over the past five years, North Carolina has learned this lesson first-hand; while NC HealthConnex is a powerful tool, its potential for furthering the goals of the Promoting Interoperability Program, and ultimately improving health care delivery and health outcomes, is only beginning to materialize as NC HealthConnex is still in its first years of broad participation and use. Moreover, certain segments of the health care market in North Carolina, particularly independent physician practices, smaller hospitals, behavioral health and long-term care organizations, and others serving rural and underserved areas, have faced significant financial pressures and resource limitations that have resulted in slower adoption of HIE, hindering their ability to achieve PI and adapt to national and state value-based payment reform efforts.

With several parallel value-added development initiatives on the horizon and a newly published *NC HIEA Roadmap 2021*, NC Medicaid requested continued federal funding through the HIE I-APDU Version 2.0 (approved May 21, 2019) for administrative and technical integration costs associated with onboarding Medicaid providers to NC HealthConnex to support NC Medicaid providers in administering smarter health care while achieving HIE-dependent Stage 3 PI objectives in 2019-2021. Whereby effective care

[7] Mark E Frisse, Kevin B Johnson, Hui Nian, Coda L Davison, Cynthia S Gadd, Kim M Unertl, Pat A Turri, Qingxia Chen, "The financial impact of health information exchange on emergency department care," J Am Med Inform Assoc 2012;19:3 328-333, November 4, 2012.

coordination and PI achievement require NC Medicaid EPs and EHs be connected to various provider types within their health care communities, NC Medicaid proposed funding onboarding activities for any Medicaid provider in North Carolina aligned with supporting the NC Medicaid EHR Incentive Program—per CMS State Medicaid Director (SMD) Letter # 16-003, this includes "behavioral health providers, substance abuse treatment providers, long-term care providers (including nursing facilities), home health providers, pharmacies, laboratories, correctional health providers, emergency medical service providers, public health providers, and other Medicaid providers, including community-based Medicaid providers."[8]

Designed as a modular, shared utility, NC HealthConnex provides a standards-based gateway to multiple data sources and HIE services that: (1) enables providers to meet the Health Information Exchange and Public Health Reporting Stage 3 PI objectives; (2) reduces the long-term connectivity costs for system participants; and 3) informs more appropriate care decisions by providing clinicians with access to additional patient data at the point of care. With respect to specific PI measures, depending on EHR capabilities, providers connected to NC HealthConnex today can exchange care summaries across unaffiliated providers, send and receive secure messages, and submit data in accordance with the public health objectives currently supported by the NC Division of Public Health. By making financial assistance for HIE onboarding available to all Medicaid provider types in North Carolina, Medicaid EPs and EHs will have access to community data and provider messaging abilities across their health care community trading partners, a need expressed by family medicine physicians in a 2017 NC survey.[9]

In summary, while NC HealthConnex is currently assisting its participants in meeting PI requirements, continued expansion of the number/scale of participating Medicaid providers/organizations will: 1) enable new participants to connect and leverage NC HealthConnex to meet Medicaid PI objectives, and 2) increase the current and future participants' trading partners and thus more readily enable them to meet their Health Information Exchange PI objective. Once connected, NC HealthConnex will encourage and track utilization by its participants through multiple tactics. These include: 1) rolling out a comprehensive training plan that works with each connected facility as requested to integrate use of the HIE into its workflow; 2) monitoring monthly Clinical Portal and bidirectionally integrated/cloud-based EHR usage statistics; and, 3) adjusting HIE features and processes per iterative feedback on value and use from NC HIEA Advisory Board members, participants and other key stakeholders.

As of March 2020, NC HealthConnex has health data available for over nine million unique patients (NC's population is 10.4 million[2]) with over 60 bidirectional interfaces delivering NC HealthConnex data into the clinical workflow. Additionally, there are over 3,000 users with Clinical Portal credentials. Average monthly portal logins in CY2020 are just over 1,200, an increase year over year by 140%. Additionally, average monthly document queries in CY2020 are over 450,000 across the HIE with over 600,000 in March. This represents a 60% increase year over year.

Revisions to the North Carolina Statewide Health Information Exchange Act (2015, 2018, 2019, and 2020)

[8] Centers for Medicare and Medicaid Services State Medicaid Director Letter # 16-003

[9] According to a 2017 survey to measure provider needs and attitudes toward NC HealthConnex distributed by the North Carolina Academy of Family Physicians to their member constituents, over 50% of respondents expressed a desire to exchange health information electronically with a variety of other provider types (including other primary care providers, specialists, hospitals, long-term care providers, home health providers, pharmacies, laboratories, medical imaging facilities, emergency medical service providers, and public health providers)—a capability they do not currently have.

[2] https://www.census.gov/quickfacts/NC [nam02.safelinks.protection.outlook.com]

In September 2015, the North Carolina General Assembly (NCGA) passed broad scale changes to the Statewide Health Information Exchange Act of 2011. The revisions under NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, created the NC Health Information Exchange Authority (the NC HIEA), a new state agency under the Department of Information Technology (DIT)'s Government Data Analytics Center (GDAC), to serve as the new State-Designated Entity for HIE. Per a legislated deadline, the statewide HIE network was transferred to the NC HIEA on February 29, 2016.

Lockstep with value-based NC Medicaid reform efforts, the 2015 revisions also directed providers who receive Medicaid or other state payments (e.g., for services rendered under the State Health Plan) for the provision of health care services to electronically submit clinical and demographic data to the state-operated health information exchange, NC HealthConnex, by June 1, 2018, or no longer receive payment for those services. In 2018, after considering extensive feedback from the health care community, stakeholders, and state agencies on the varying states of technical readiness of provider groups required to connect under the law, the NCGA made additional revisions to NCGS § 90-414.4, as amended by NC Session Law 2018-41, Section9.(a). This latest set of revisions extends the deadline for certain groups to connect and creates an additional extension process whereby groups may apply for a limited extension beyond their legislated deadline if they demonstrate an "ongoing good-faith effort" to work toward the connection process. The current deadlines are as follows:

1. Hospitals, physicians, physician assistants and nurse practitioners as defined in statute must be connected and sending clinical and demographic data as of June 1, 2018.
2. Prepaid Health Plans under Medicaid managed care set to launch in 2019 must be connected and sending claims and encounter data as of the start of their contract with NC Medicaid.
3. Local management entities/managed care organizations, which manage behavioral health services statewide, must be connected and sending claims and encounter data as of June 1, 2020.
4. Ambulatory surgical centers and dentists as defined in statute must be connected and sending clinical and demographic data as of June 1, 2021.
5. Pharmacies as defined in statute must be connected and sending claims data as of June 1, 2021.
6. Provider types other than those mentioned in 1-5 above who receive Medicaid or other state payments for the provision of health care services must be connected and sending clinical and demographic data of June 1, 2019.

As of July 1, 2018, 78% of North Carolina providers that fell under the June 1, 2018 deadline (per 1. above) were connected and sending data to NC HealthConnex; as of November 2018, this figure was 84%. Some other providers have signed contracts with the NC HIEA and have been granted extensions due to connection delays outside of their control. The remaining providers are working with NC Medicaid on corrective actions plans to connect and comply. With the move to managed care happening in 2019, NC Medicaid is doing its best to collaborate with and accommodate providers amidst lots of change, so as not to create access issues for beneficiaries.

The law cited the following findings as justification for the connection and data sharing mandate:

(1) That controlling escalating health care costs of the Medicaid program and other State-funded health services is significant to the State, its taxpayers, its Medicaid recipients, and other recipients of State-funded health services.

(2) That the State needs timely access to certain demographic and clinical information pertaining to services rendered to Medicaid and other State-funded health care program beneficiaries and paid for with Medicaid or other State-funded health care funds in order to assess performance, improve

health care outcomes, pinpoint medical expense trends, identify beneficiary health risks, and evaluate how the State is spending money on Medicaid and other State-funded health services.

(3) That making demographic and clinical information available to the State by secure electronic means as set forth in subsection (b) of this section will, with respect to Medicaid and other State-funded health care programs, improve care coordination within and across health systems, increase care quality for such beneficiaries, enable more effective population health management, reduce duplication of medical services, augment syndromic surveillance, allow more accurate measurement of care services and outcomes, increase strategic knowledge about the health of the population, and facilitate health care cost containment.[10]

While the mandate requires connection and data contribution to NC HealthConnex, the NC HIEA encourages use of the system through the provision of value-added features such as event notifications, automated public health reporting and provider messaging at no cost to providers.

Recognizing that a requirement for the vast majority (an estimated 98%) of North Carolina health care providers to connect and share data would require significant effort and resources, the NC General Assembly provided state appropriations to assist with initial operations of NC HealthConnex, provided that the NC HIEA "[h]ave the successor HIE Network gradually become and remain one hundred percent (100%) receipt-supported by establishing reasonable participation fees and by drawing down available matching funds whenever possible."[11]

In June 2019, the North Carolina General Assembly made additional changes to the HIE Act. Based on feedback from the health care community and the results of a June 2018 feasibility study, N.C. Session Law 2019-23 delayed the June 1, 2019, deadline until June 1, 2020. Additionally, licensed physicians whose primary area of practice is psychiatry now have until June 1, 2021, to connect. Further, SL 2019-23 now exempts certain provider types from the mandatory requirement to connect and send data to the Health Information Exchange network, NC HealthConnex. The following provider types have the option to connect on a voluntary basis, however, they are no longer required to connect:

•Community-based, long-term services and supports providers, including personal care services, private duty nursing, home health and hospice care providers.

•Intellectual and developmental disability services and supports providers, such as day supports and supported living providers.

•Community Alternatives Program waiver services (including CAP/DA, CAP/C and Innovations) providers.

•Eye and vision services providers.

•Speech, language, and hearing services providers.

•Occupational and physical therapy providers.

•Durable medical equipment providers.

•Nonemergency medical transportation service providers.

•Ambulance (emergency medical transportation service) providers.

•Local education agencies and school-based health providers.

[10] N.C.G.S. 90-414.4(a).

[11] NCSL 2015-241 Section 12A.5(a)(3), as amended by NCSL 2015-264.

Since passage of this legislation, the NC HIEA provider relations and outreach teams have worked extensively with providers impacted by this change to help them understand that while they are no longer required to connect, they can derive benefit of full participation in health information exchange. There were 256 participant organizations who had completed the contracting process with the NC HIEA at the time law was passed. As of May 2020, 40% of those have terminated their agreement. Seventy-six participants have continued their participation voluntarily representing 112 facilities. Of these, 23 organizations representing 38 facilities are participating in services only and will not be submitting patient data to NC HealthConnex.

In response to the global COVID-19 pandemic, North Carolina policymakers passed a bipartisan relief package in May 2020 to provide assistance to families, schools, hospitals and small businesses. NCSL 2020-3 also extends the June 1, 2020, deadline for connecting to NC HealthConnex to October 2021 to allow health care providers hard hit by COVID-19 additional time to establish connectivity.

Vision for Accelerating Medicaid Provider Onboarding to NC HealthConnex

NC Medicaid's goals for NC Medicaid Health IT and the NC Medicaid EHR Incentive Program, as described in Section C of the NC SMHP, are closely aligned with those of the NC HIEA and the work described herein to accelerate Medicaid provider onboarding to NC HealthConnex. The NC HIEA's broad vision is to:

> *Link all health care providers across North Carolina enabling participants to access information to support improved health care quality and outcomes.*

Building on this idea, the vision specific to this Medicaid provider onboarding initiative is two-pronged:

> *Support Medicaid providers across North Carolina in their pursuit of connecting to NC HealthConnex to inform smarter and better health care for their patients, while meeting their regulatory and quality reporting requirements under the NC Medicaid EHR Incentive Program and The North Carolina Health Information Exchange Act. Support the North Carolina Medicaid program in providing visibility into health care service utilization to assist in the transition to value-based payment and improved health outcomes for Medicaid patients.*

Status of Statewide Organizational Connectivity to NC HealthConnex

The status of organizational connectivity to statewide HIE services is outlined in the table below. The numbers below represent total known facilities or organizations/entities statewide for each provider type category, and include those that serve Medicaid, Medicare, private-payer, un- and under-insured populations. This table is provided as background information only to give CMS broader insight into the entire state landscape. Note that several facilities may make up a single organization and/or connection; the total number of integrations/"connections" to connect the entire state to NC HealthConnex is unknown. Assumptions for the numbers provided in the table below include:

1. A provider is "connected" when patient clinical and demographic information from their EHR pertaining to services paid for by Medicaid and other State-funded health care programs are being sent to NC HealthConnex at least twice daily, either through a direct connection to NC HealthConnex or via a larger health system, ACO, HIE or cloud-based EHR. All daily incoming data feeds from currently "connected" participants are via Health Level-7 (HL7) messages and/or Continuity of Care Documents (CCDs); no ongoing daily data submission substantiating a "connection" is currently being transmitted to NC HealthConnex via Direct Secure Messaging.

2. The NC laboratory market is split between hospitals (approximately 40%) and two major retail laboratory companies: Laboratory Corporation of America (LabCorp) and Quest Diagnostics (together, approximately 60%). Both LabCorp and Quest have executed participation agreements to connect and submit lab results to NC HealthConnex. In April 2020, Quest Diagnostics is in test and LabCorp is anticipated to enter test in the next quarter. With the COVID-19 outbreak, this schedule could be delayed due to resource constraints from the commercial labs.
3. North Carolina's Medicaid Behavioral Health Program operates through seven regional Local Management Entities/Managed Care Organizations (LME/MCOs). As the LME/MCOs will not have access to all clinical data in the HIE data target for their constituent providers/agencies, individual providers/agencies will need to connect independently to satisfy the law. A NC HIEA Behavioral Health Work Group was formed in 2017 and includes three behavioral health agencies and two behavioral health EHRs, in addition to NC HIEA and technical contractor staff. The group developed a behavioral health/intellectual and developmental disability (BH/IDD)-specific connection model, including a data target and best practices, which has helped to connect nearly 300 BH/IDD facilities in 2017-2018. As of May 2020, the number of connected BH/IDD facilities has increased to 590.LME/MCOs are also required to connect under the law by June 1, 2020, to provide claims/encounter data and are eligible for onboarding support under this I-APDU. The numbers in the table below represent the seven LME/MCOs and the approximate number of independently operating individuals and agencies under those seven entities (from LME/MCO data as of March 24, 2017); unique facilities have not been estimated.
4. The number of Physician Practices/Other Facilities represents the number of active entities registered with the NC Secretary of State's office that provide health care services as their professional services indication as of March 17, 2017 (11,644). We anticipate some overlap in the figures between this category and the behavioral health and long-term care categories.

Table 9: Status of Statewide Organizational Connectivity to NC HealthConnex, as of April 2019

	# Statewide	# Contracted	# Connected
Hospitals	135	134	113
	# Statewide	**# Contracted**	**# Connected**
County Health Departments	85 (rep. 100 counties)	84 representing 110 facilities	72 representing 90 facilities
Federally Qualified Health Centers (FQHCs)	39 (incl. 2 look-alikes)	39 representing 61 facilities	30 representing 42 facilities
Rural Health Clinics	70*	38	28
Laboratories (major retail)	2		
Behavioral Health Organizations	7 LME/MCOs 4,000+ individual providers/agencies	7 LME/MCOs 1,453 organizations representing 2,672 facilities	3 LME/MCOs 136 organizations representing 590 facilities
Long-Term/Post-Acute Care Organizations	1,200+	353 organizations representing 750 facilities	18 live representing 61 facilities

Physician Practices/Other Facilities (in addition to above categories)	11,000+	2,528 organizations representing 9,930 facilities	759 organizations representing 5,243 facilities

**Note: the baseline number of Rural Health Clinics statewide as certified by CMS has been revised from 26 in Version 1.0 of the HIE I-APD to 70, the current number tracked by the NC Office of Rural Health. The initial count was taking into consideration organizational ownership, while the new figure represents unique facilities.*

Within much of the above universe of organizations/facilities, the NC HIEA's provider-entity resolution workstream reports approximately 72,453 unique providers serving Medicaid patients statewide as of March 31, 2020.

3.1.9 Increasing Utilization Through Training and Data Integrity

As NC HealthConnex rapidly adds Medicaid providers to its statewide network, North Carolina aims to better train and prepare those providers to leverage the HIE in their clinical workflows. Currently, the NC HIEA provides six recorded video tutorials and a user guide to its participants, but lacked the capacity to conduct widespread onsite training and assistance integrating use of the HIE's features into a provider's clinical workflow. Concurrent with training on building use of NC HealthConnex into daily workflow, the NC HIEA also has a need for participant training and support regarding data quality improvement within participant EHRs, which will translate to better data quality in the HIE.

To fill these gaps, North Carolina has partnered with the North Carolina Area Health Education Centers (NC AHEC) housed at the University of North Carolina. The NC AHEC Program at the University of North Carolina at Chapel Hill (UNC-CH) was awarded an ONC HITECH grant on February 8, 2010, to perform the function of the NC Regional Extension Center (REC). Since this time, the NC AHEC Practice Support Program has continued to deliver provider-centric services to enable transformed health care service delivery and patient-centered care through HIT statewide. Although funding for the program's HIT initiatives transitioned from the initial REC grant to HITECH funds under the NC HIT I-APDU in February 6, 2015, provider engagement in the NC Medicaid EHR Incentive Program and HIE is ongoing. NC AHEC has continued to build capacity in coaching practices through transformation to prepare for new value-based payment models and stands ready to quickly disseminate technical assistance to its base of primary care and subspecialty practices, as well as other Medicaid provider types now participating with NC HealthConnex.

On the national front, NC AHEC completed an Agency for Healthcare Research and Quality (AHRQ) R18 grant to support the use of data in enabling practices to improve cardiovascular health and is currently working with AHRQ to assist practices with improving assessment and follow up for unhealthy drinking. NC AHEC has worked with several partners across the state to strengthen the quality and reach of services while minimizing duplication of efforts; these include Alliant Health, the North Carolina Medical Society Foundation (NCMSF), the North Carolina Academy of Family Physicians (NCAFP), Community Care of North Carolina (CCNC), North Carolina Pediatric Society (NCPS), North Carolina Nurses Association (NCNA), North Carolina Academy of Physician Assistants (NCAPA), North Carolina Community Health Center Association (NCCHCA), and the NC Institute for Public Health (IPH).

The NC AHEC Practice Support Program includes 30-40 staff with extensive experience in teaching, training, and quality improvement assistance and has worked with over 4,000 practices statewide. The NC HIEA has historically worked with NC AHEC to ensure this team is up to speed on NC HealthConnex recruiting efforts and technical features to share with the practices they work with on a regular basis.

Through the funding approved May 21, 2019 via the HIE I-APDU Version 2.0, North Carolina is launching a robust NC HealthConnex training and data quality program, directed by the NC HIEA and carried out by NC AHEC, including:

- Onsite and virtual training for NC HealthConnex existing and newly connected participants, including training on new features and specific use cases, as well as the facilitation of larger health system or regional group workshops/trainings;
- The creation of content for brief video tutorials on using specific features of NC HealthConnex for patient care and quality improvement;
- The establishment of a NC HealthConnex training request/support center at NC AHEC (separate from the technical Help Desk hosted by SAS, the NC HealthConnex technical vendor);
- Promotion of data quality and integrity by reviewing the NC HealthConnex participant data quality report together with a practice or organization and working to close gaps in the quantity and quality of data provided to NC HealthConnex; and,
- Joint marketing with the NC HIEA to promote available training options, both to participants already live on NC HealthConnex and to those in the onboarding process.

On May 21, 2019, North Carolina received CMS approval for $3,086,268 ($2,777,641 @ 90% FFP) for contracted services for Q4 FFY 2019-Q4 FFY 2021 to launch this enhanced training and data quality program. This amount is inclusive of personnel, supplies, travel, development of training modules, subcontracts, etc., and is broken out as follows: FFY 2019 ($396,252 total, $356,637 @ 90% FFP), FFY 2020 ($1,345,008 total, $1,210,507 @ 90% FFP), and FFY 2021 ($1,345,008 total, $1,210,507 @ 90% FFP). *Table 11* on pages 32-33 of the HIE I-APDU Version 2.0 contains a quarterly cost breakout for this initiative; and *Table 13* on pages 38-39 and *Table 17* and *Table 18* on pages 42-43 cite the total amount for this contractor, and what is included in the rate, for FFYs 2019-2021.

While training will be provided at the practice's, facility's, or health system's request, the NC HIEA and NC AHEC anticipate providing training in some capacity up to approximately 1,900 Medicaid-serving NC HealthConnex participating organizations in the first year of the program, and up to an additional 2,000+ through the end of FFY 2021.

North Carolina believes that usage of the NC HealthConnex network will continue to increase over the next year as additional training materials are developed to educate providers how to effectively integrate the HIE's features into their daily clinical workflows. The NC HIEA and AHEC have agreed to create a series of training modules with a goal to have those complete by the end of this calendar year. Currently, one video training module has been completed in collaboration with AHEC and is designed to be delivered on demand by the participant. Four additional video webinars are underway. Additionally, hands-on training using PowerPoint slide decks is available and underway via large one to many webinars, in-person practice training, and via virtual one-to-one training with a practice. North Carolina believes that by working closely with NC AHEC, the HIEA Outreach team, and the Office of Rural Health to deliver these trainings, we will see continued increase in use of system and demand for services will grow.

3.1.10 Enhancements to NC HealthConnex to Support NC Medicaid Advanced Medical Homes

As North Carolina approaches a major shift to Medicaid managed care in mid-2019, NC DHHS and the NCGA plan to leverage NC HealthConnex to support Medicaid providers' growing needs for access to timely clinical data across the care continuum. In a policy paper entitled *Data Strategy to Support the*

Advanced Medical Home Program in North Carolina dated July 20, 2018[12], NC DHHS encourages providers to leverage NC HealthConnex as a key partner for their data sharing needs around admission/discharge/transfer notifications and access to other relevant clinical information to become (and maintain status as) Advanced Medical Homes, and to inform their care decisions and population health/care management processes. The NC HIEA has a two-pronged approach, as described below, to meet the emerging needs of Medicaid providers under new requirements in 2019, while better supporting their ability to meet the Health Information Exchange PI objective.

While North Carolina suspended Medicaid transformation in the early part of 2019, the NC HIEA has continued to provide outreach and training to Medicaid practices that are seeking to become Advanced Medical Homes to provide them with information about the tools they will need for successful care coordination and proactive patient monitoring.

Enabling Nimble Data Retrieval and a Current Snapshot

NC HealthConnex currently exchanges health information with EHRs and HIEs primarily via legacy Health Level Seven International (HL7) standards and HL7 Consolidated Clinical Document Architecture (C-CDA). This type of document exchange has provided a workable foundation for the sharing of summary of care (encounter summary) documents among health care providers and public health entities in North Carolina. However, new data standards now offer the opportunity to: 1) move beyond a set of structured documents to leverage and transport discrete, critical data elements on their own (or in logically grouped "bundles") to where they'll be most useful; and 2) better consolidate disparate encounter data to give a treating provider a robust current "snapshot" of relevant patient information from the HIE at the point of care, directly within their EHR or as a printable record within the NC HealthConnex Clinical Portal.

Per guidance in State Medicaid Director Letter #16-003 pertaining to available HITECH funding for interoperability and HIE architecture, North Carolina is leveraging federal financial participation (approved May 21, 2019) to implement the following HIE infrastructure to better support North Carolina Medicaid providers in their data needs for Advanced Medical Home participation and in meeting their Health Information Exchange PI objective:

- The FHIR Standard: technology and health care industry experts (including Apple, Cerner, and many of the country's largest health systems) agree that health data interoperability must move quickly toward a more flexible, Application Program Interface (API)-based standard that allows for data elements to be more nimbly requested, sent and retrieved—together or individually—by health care providers, managers, payers and patients via multiple types of devices and user interfaces. HL7's open-source solution to this challenge is the FHIR standard. Per the *NC HIEA Roadmap 2021*, enabling FHIR for NC HealthConnex will allow for myriad future use cases to better promote interoperability and support Medicaid providers, management and patients in their quest for instant, relevant patient health information. The NC HIEA's initial application of the FHIR standard will be in collaboration with NC Medicaid to support Advanced Medical Homes in their data sharing needs. North Carolina proposes to leverage the ONC Inferno testing suite to ensure consistent implementation, per an October 2, 2018, ONC blog post.[13]

[12] https://files.nc.gov/ncdhhs/AMH-Data-PolicyPaper_FINAL_2018720.pdf
[13] https://www.healthit.gov/buzz-blog/interoperability/onc-is-fhird-up-unwrapping-the-new-inferno-testing-suite/

Consolidated Continuity of Care Document (CCD): while the NC HealthConnex Clinical Portal offers a consolidated statewide longitudinal view of a patient record, Medicaid providers that access NC HealthConnex from within their EHRs are still shuffling through a list of recent summary of care documents to find information relevant to their point of care treatment decisions. North Carolina will build logic to make available a single, current, consolidated summary of care record that mirrors key elements of the Clinical Portal's consolidated longitudinal record and follows the Promoting Interoperability and NC HIEA CCD data specification. North Carolina believes that, in combination with the proposed training program, this easily accessible consolidated record—customized for each organization—will dramatically increase usage of NC HealthConnex, better inform medication reconciliation, reduce duplicate testing and procedures, and contribute to better care management and appropriate care transitions for Medicaid providers and patients. The NC HIEA believes that becoming FHIR-enabled and producing a customized, consolidated CCD in response to a NC HealthConnex query from within the provider EHR will increase use of NC HealthConnex and thus promote additional sharing of summary of care documents for follow-up and care transitions, contributing to a Medicaid EP or EH's performance on the Health Information Exchange PI objective and measures. Specifically, these features will directly enhance the ability of EPs and EHs to meet PI Objective 7 Measures 2 and 3 by equipping them with a document that will serve as a single source of truth across care sites statewide, and power clinical information reconciliation by providing consolidated, current medications, medication allergies, and problems.

The NC HIEA will initially work to test initial FHIR connectivity with a cloud-based EHR vendor serving multiple Medicaid Advanced Medical Homes in collaboration with NC Medicaid, then conduct one test with an additional Medicaid-serving EHR vendor each quarter after the initial test throughout the period covered under this I-APDU. NC HealthConnex completed a software upgrade in April 2020 moving from the InterSystems HealthShare version 2017.2.2 to 2019.1.2. This upgrade sets the stage for the enablement of the FHIR standard to assist Medicaid providers and managed care organizations with data exchange to support the Advanced Medical Home model.

The NC HIEA will initially train a large Medicaid-serving health system on leveraging the consolidated CCD in the workflow, and then continue to onboard additional bidirectional Medicaid-serving HIE participants to the consolidated CCD service. As of May 2020, the development has been completed for this initiative and the NC HIEA is working with a hospital system to pilot this service offering.

In a CMS letter dated May 21, 2019, NC received approval for $364,800 ($328,320 @ 90% FFP) for contracted services for Q4 FFY 2019-Q4 FFY 2021 to FHIR-enable and test NC HealthConnex [FFY 2019 ($0 total), FFY 2020 ($172,800 total, $155,520 @ 90% FFP), and FFY 2021 ($192,000 total, $172,800 @ 90% FFP)] and approval for $320,000 ($288,000 @ 90% FFP) for contracted services for Q4 FFY 2019-Q4 FFY 2021 to design, develop and implement the consolidated CCD for integrated HIE users [FFY 2019 ($0 total), FFY 2020 ($200,000 total, $180,000 @ 90% FFP), and FFY 2021 ($120,000 total, $108,000 @ 90% FFP)].

These contracted services are provided at an inclusive rate for a deliverables-based contract and contain all personnel, supplies, subcontracts, etc. needed to deliver the technology design, development and implementation/onboarding services described herein. The above total costs represent summary figures across *Table 12* and *Table 13* on this I-APDU. *Table 17* of this I-APDU contains a quarterly cost breakout of the implementation component of these initiatives (testing with/onboarding Medicaid providers to these services). All approved contracts costs are included in the total contracted services number for the HIE technology vendor in *Table 15* in this I-APDU.

Improving Event Notifications to Support Care Management and Transitions of Care

In September 2018, the NC HIEA introduced NC*Notify, an improved event notification service available at no cost to full participants of NC HealthConnex. The service was developed as a response to extensive provider and stakeholder feedback to leverage the HIE to routinely place targeted, actionable patient data into the hands of subscribed providers, based on their desired specific patient panels. Unlike the notification services previously available in the NC HealthConnex Clinical Portal, NC*Notify provides a secure, regular "push" of relevant notifications to providers as their patients receive services statewide and across the care continuum, including in acute and ambulatory care settings.

Per guidance in State Medicaid Director Letter #16-003 pertaining to available HITECH funding for interoperability and HIE architecture, and specifically encounter alerting, North Carolina received approval May 21, 2019 to leverage federal financial participation for Releases/Versions 3.0 and 4.0 of NC*Notify to expand and enhance its usefulness for NC Medicaid providers striving to provide appropriate care management and care transitions for their patients—functions central to the Promoting Interoperability program and participation with NC Medicaid as an Advanced Medical Home. These releases will:

1. Add additional notification triggers, as identified by a newly built Clinical Intelligence Engine (CIE). Examples of these triggers include a data addition to the NC Diabetes Registry, an administered immunization as reported to the NC Immunization Registry, a filled prescription as reported to the NC Controlled Substances Reporting System, a critical lab result as flagged by the HIE from multiple lab provider inputs, a patient attribution change as reported from a health plan, and a risk score calculated by the CIE itself based upon various data in the HIE.
2. Add configuration preferences, such as patient-level content and frequency preferences based upon risk level.
3. Add "real-time" as a frequency preference, so subscribers may be alerted as their patients receive care elsewhere.
4. Add delivery methods and formats, including by FHIR Application Programming Interface (API), Portable Document Format (PDF), HL7 and mobile application.
5. Add message content, including provider information, place of care details, relevant data from connected state registries and repositories, and a patient's NC HealthConnex consolidated CCD.
6. Improved reporting capabilities, to include monthly volume reports per participant.

Currently in its second version, the service provides daily, weekly, monthly or quarterly updates to providers, as requested, on hospital and ambulatory setting patient admissions and discharges via secure file transfer protocol (sFTP). Subscribed providers or provider organizations are responsible for providing their requested patient panels and updating those panels no less than quarterly. NC*Notify Version 2.5 added chief complaint and diagnosis to the message and enabled additional delivery mechanisms, including via Direct Secure Messaging.

Working collaboratively with the NC Medicaid Advanced Medical Home Strategy Team, the NC HIEA has three more planned releases of NC*Notify through 2020 (May, June and December), each with additional functionality, data elements, and delivery methods, to make the notifications more useful for NC Medicaid providers' and managed care organizations' population health/care management processes. More information on the planned NC*Notify releases can be found in the *NC*Notify Service Roadmap*, which was submitted with the HIE I-APDU Version 2.0. More information on adoption goals for NC*Notify can be found in the *NC HIEA Roadmap 2021*. See Appendix D of this I-APDU for a visual representation of NC*Notify and other services and system interactions with NC HealthConnex.

NC*Notify Version 3 and 3+ are in development with pilots scheduled in May and early June of 2020. The capabilities of Version 3 and 3+ are detailed below:

NC*Notify V3

Patient Panels, Easing Provider Burden

Patient panels are required for NC*Notify. Subscribers may choose to securely deliver these files to SAS via sFTP or DSM. Patient panels may be updated no more frequently than once per week. Patient panels must be updated at a minimum of once every 90 days to ensure subscribers are receiving notifications for patients with whom they currently have a relationship.

Subscribers to NC*Notify V3 can choose to send patient panels which are full replacements of previous panels (available early May 2020) or patient panels which are updates to an existing panel (available late May 2020). One enhancement found in NC*Notify V3+ will help alleviate challenges experienced by smaller practices required to produce and supply a patient panel to enroll in the notification service. With V3+, auto-attribution of patients based on encounter information sent to NC HealthConnex will be available.

Notifications

Subscribers to NC*Notify V3 can choose to receive notifications via a flat file or via a HL7 v2 messages. Notification files can be delivered as frequently as once per day or weekly. HL7 notifications will be delivered in near real-time. Subscribers to NC*Notify V3 who would like to receive notifications via near real-time HL7 v2 will require a direct connection to the HIE and the ability to ingest these data into their systems.

NC*Notify V3+

Subscribers enrolled in NC*Notify V3+ have several options for subscribing to patients. These options include:

- Sending a patient panel via sFTP or DSM (available early June 2020)
- Auto-attribution of patients based on encounter information sent to NC HealthConnex (available early June 2020)
- Uploading a patient panel via a Self-Service Panel Loader (available early July 2020)

NC*Notify V3+ User Interface

The NC*Notify V3+ UI is a web-based, user-friendly way to view notifications. The interface allows clinicians and others to view notifications, mark and view work-flow history, filter and search notifications, download a notification summary, and view prior events for a patient.

As all NC Medicaid providers are required by law to participate with NC HealthConnex by specified dates in 2018-2021 (ranging per provider type), they may leverage NC*Notify at no cost to become better informed (and on a timelier basis) of their patients' care outside of their organizations. North Carolina anticipates that this type of pushed, timely information will prompt additional sharing of summary of care records, contributing to their performance on the Health Information Exchange PI objective.

In a CMS letter dated May 21, 2019, NC received approval for $2,393,200 ($2,153,880 @ 90% FFP) for contracted services for Q4 FFY 2019-Q4 FFY 2021 for design, development and implementation of

NC*Notify Releases/Versions 3.0 and 4.0. This amount is broken out as follows: FFY 2019 ($0 total), FFY 2020 ($971,600 total, $874,440 @ 90% FFP), and FFY 2021 ($1,421,600 total, $1,279,440 @ 90% FFP).

These contracted services are provided at an inclusive rate for a deliverables-based contract and contain all personnel, supplies, subcontracts, etc. needed to deliver the technology design, development and implementation/onboarding services described herein. The above total costs represent summary figures across *Table 12* and *Table 13* of this I-APDU. *Table 17* contains a quarterly cost breakout of the implementation component of these initiatives (onboarding Medicaid providers to the service). All approved contractor costs are included in the total contracted services number for the HIE technology vendor in *Table 15* of this I-APDU.

3.1.11 Enabling Electronic Orders and Results with the State Laboratory of Public Health

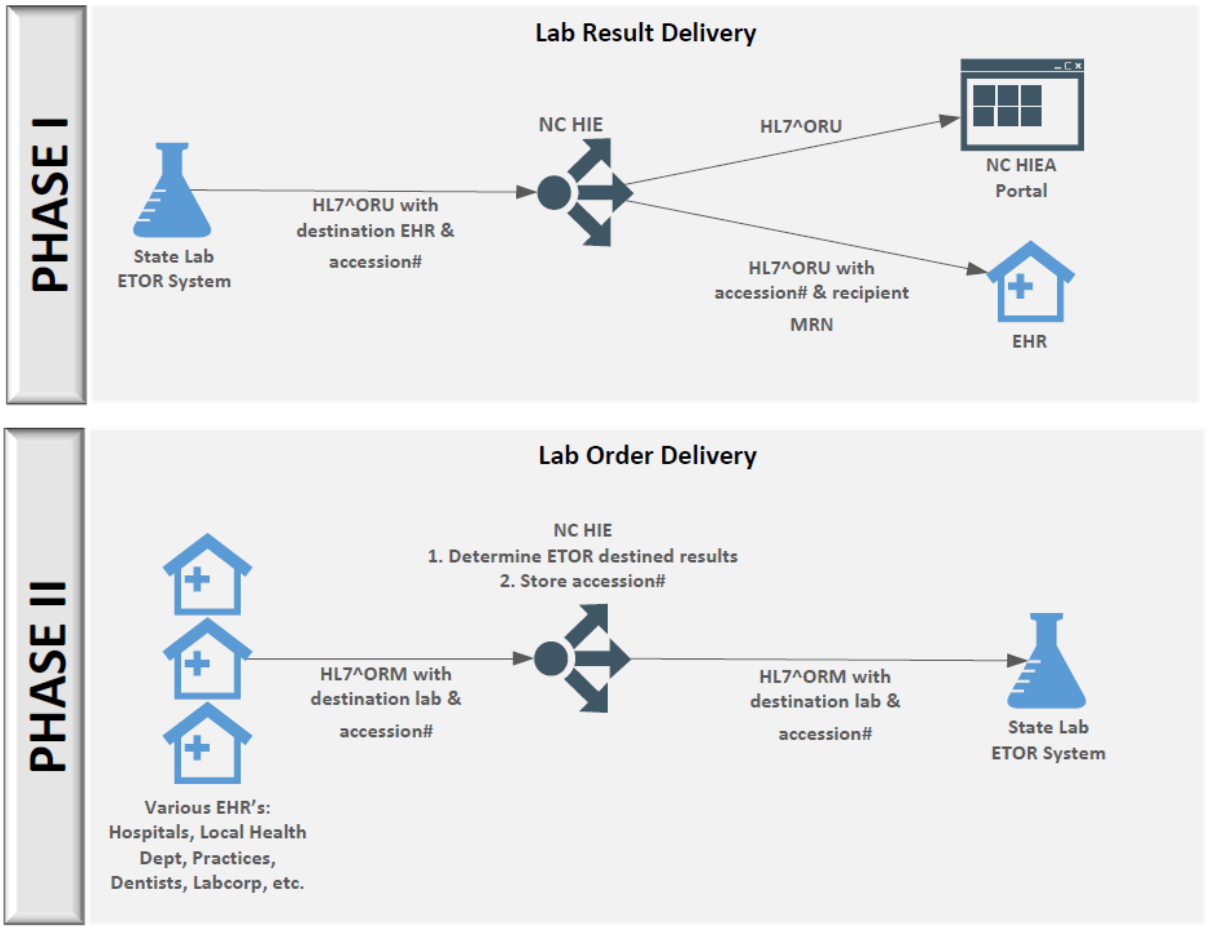
North Carolina has a unique opportunity to leverage NC HealthConnex's existing interfaces with provider EHRs, which by state law will eventually include approximately 98% of North Carolina health care providers, to serve as a gateway to the North Carolina State Laboratory of Public Health (NC SLPH) to introduce efficiencies into their orders and results process. Through a bidirectional interface between the two systems, health care providers in North Carolina will be able to submit electronic lab orders and receive results from the SLPH without leaving their EHRs—a marked improvement from today's paper- and portal-based process.

The mission of the NC SLPH is to "provide certain medical and environmental laboratory services (testing, consultation and training) to public and private health provider organizations responsible for the promotion, protection and assurance of the health of North Carolina citizens."[14] Among its services are myriad environmental testing services (water systems, dairies, etc.); testing for biological and chemical terrorism agents; microbiology and virology/serology services for various specimens; testing for newborn and prenatal screenings and infant blood lead levels, and others. Health systems, pediatric and primary care providers, and many other health care providers rely on the services of the NC SLPH to remain compliant with state reporting laws and inform their daily patient care.

Per guidance in State Medicaid Director Letter #16-003 pertaining to available HITECH funding for interoperability and HIE architecture, connecting public health systems to HIEs, and assisting EPs and EHs with meeting specific PI objectives, on May 21, 2019, North Carolina received approval for federal financial participation to assist with the design, development and implementation of the NC HealthConnex-NC SLPH interface and subsequent onboarding of Medicaid providers to the new service. Specifically, this new HIE feature will allow EPs and EHs to leverage their existing NC HealthConnex interface to help meet PI Objective 4 Measure 2, Computerized Order Entry of ordered labs. Figure 4 below depicts the proposed information flow for lab result delivery into EHRs and the ordering process to NC SLPH.

[14] https://slph.ncpublichealth.com/

Figure 4: Proposed Information Flow between the NC SLPH, NC HealthConnex and Healthcare Organizations



In a CMS letter dated May 21, 2019, NC received approval for $559,200 ($503,280 @ 90% FFP) for contracted services for Q4 FFY 2019-Q4 FFY 2021 for design, development and implementation of the NC HealthConnex-NC SLPH orders and results service. This amount is broken out as follows: FFY 2019 ($0 total), FFY 2020 ($0 total), and FFY 2021 ($559,200 total, $503,280 @ 90% FFP).

These contracted services are provided at an inclusive rate for a deliverables-based contract and contain all personnel, supplies, subcontracts, etc. needed to deliver the technology design, development and implementation/onboarding services described herein. The above total costs represent summary figures across *Table 12* and *Table 13* of this I-APDU. *Table 17* contains a quarterly cost breakout of the implementation component of these initiatives (onboarding Medicaid providers to the service). All approved contractor costs are included in the total contracted services number for the HIE technology vendor in *Table 15* of this I-APDU. See Appendix D of this I-APDU for a visual representation of the planned interactions between the NC SLPH and NC HealthConnex.

NC HealthConnex and Promoting Interoperability

At the core of the HIE-PI relationship is care coordination across unaffiliated health care providers. A subset of NC Medicaid EPs and EHs are using NC HealthConnex today to facilitate electronic transitions of care and referrals, including backend reporting to substantiate these for audit documentation. In addition to care transitions, North Carolina is leveraging NC HealthConnex as a gateway for providers' reporting of

public health data to satisfy PI requirements and improve efficiencies within NC DHHS. The approaches for immunization and reportable lab reporting were approved and funded in the SMHP (Section A.14) and HIT I-APDU (Section 3.4.1) dated August 8, 2013. North Carolina's public health utilities through the Division of Public Health (DPH) include the following services (with related HIE capabilities in parentheses):

- NC Immunization Registry (bidirectional functionality live/available)
- Electronic Lab Reporting (daily batch reporting functionality live/available)
- NC Diabetes Specialized Registry (automated reporting for all HIE participants live/available)
- State Laboratory of Public Health (bidirectional orders/results interface proposed in the HIE I-APDU Version 2.0 and approved May 21, 2019)
- NC Controlled Substances Reporting System (access within the HIE Clinical Portal under development; access from within provider EHRs proposed in the HIE I-APDU Version 2.0 and approved May 21, 2019)
- Central Cancer Registry (potential candidate for future I-APDU)

For the NC Medicaid EHR Incentive Program's Program Years 2019-2021, NC HealthConnex will continue to support EPs and EHs in meeting several of the measures under the Health Information Exchange and Public Health objectives for Stage 3 and will newly support the Stage 3 Computerized Provider Order Entry (CPOE) objective through the coming bidirectional interface with the State Lab of Public Health. *Table 10* below shows a crosswalk of NC HealthConnex functionality and Stage 3 objectives supported. NC Medicaid will update this I-APDU to include any changes or additions to supporting functionality in subsequent years of the NC Medicaid EHR Incentive Program.

Table 10: Stage 3 Promoting Interoperability Objectives and Supporting NC HealthConnex Functionality

Stage 3		
Objective	**Measures**	**Supporting NC HealthConnex Functionality**
4. Computerized Provider Order Entry (CPOE)	**EP Measures:** An Eligible Professional (EP), through a combination of meeting the thresholds and exclusions (or both), must satisfy all three measures for this objective: **Measure 1** – More than 60 percent of medication orders created by the EP during the Promoting Interoperability (PI) reporting period are recorded using computerized provider order entry. **Measure 2** – More than 60 percent of laboratory orders created by the EP during the PI reporting period are recorded using computerized provider order entry. **Measure 3** – More than 60 percent of diagnostic imaging orders created by the EP during the PI reporting period are recorded using computerized provider order entry. **EH Measures:** An Eligible Hospital/Critical Access Hospital (CAH) must meet the thresholds for all three measures. **Measure 1** – More than 60 percent of medication orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency department (POS 21 or 23) during the	• **State Laboratory of Public Health Orders and Results:** This new capability will allow Medicaid providers to use CPOE within their EHR to order laboratory tests from the State Laboratory of Public Health. This new functionality will contribute to Measure 2 for participating Medicaid providers, and will help to convert some of the two million labs now annually requested via paper and portal to an electronic process, seamlessly integrated within the provider's EHR.

	Promoting Interoperability (PI) reporting period are recorded using computerized provider order entry. **Measure 2** – More than 60 percent of laboratory orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency department (POS 21 or 23) during the PI reporting period are recorded using computerized provider order entry. **Measure 3** – More than 60 percent of diagnostic imaging orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency department (POS 21 or 23) during the PI reporting period are recorded using computerized provider order entry.	
7. Health Information Exchange	**Measures (identical for EP/EH):** Providers must attest to all three measures and must meet the threshold for at least two measures to meet the objective. **Measure 1** – For more than 50 percent of transitions of care and referrals, the EP/EH/CAH that transitions or refers their patient to another setting of care or provider of care: (1) Creates a summary of care record using CEHRT; and (2) Electronically exchanges the summary of care record. **Measure 2** – For more than 40 percent of transitions or referrals received and patient encounters in which the provider has never before encountered the patient, the EP/EH/CAH incorporates into the patient's EHR an electronic summary of care document. **Measure 3** – For more than 80 percent of transitions or referrals received and patient encounters in which the provider has never before encountered the patient, the EP/EH/CAH performs a clinical information reconciliation. The provider must implement clinical information reconciliation for the following three clinical information sets: (1) Medication. Review of the patient's medication, including the name, dosage, frequency, and route of each medication. (2) Medication allergy. Review of the patient's known medication allergies. (3) Current Problem list. Review of the patient's current and active diagnoses.	• Direct Secure Messaging available to all NC HealthConnex participants through the NC HealthConnex Clinical Portal or visually integrated within a provider's EHR. The NC HealthConnex HISP is DirectTrust accredited and maintains compliance with all ONC/DirectTrust requirements. • Provider Directory with 20,000+ provider addresses available through NC HealthConnex Clinical Portal and sent to NC HealthConnex participants directly for use within their EHRs (updated quarterly). • Query-based retrieval of patient records within NC HealthConnex by providers at the point of care. New capability in 2019-2020 for EHR-integrated users to access a consolidated CCD which will contain the most current, consolidated information for Measure 3. • Backend reporting on message delivery notifications for MU/PI reporting verification/audit logging. • Note: non-eligible provider types connected to NC HealthConnex will augment the electronically available referral/trading partners for EPs/EHs/CAHs.
8. Public Health Reporting	**Measures (1-5 identical for EP/EH):** **Measure 1** – Immunization Registry Reporting: The EP/EH/CAH is in active engagement with a PHA to submit immunization data and receive	• **Immunization Registry Reporting**: Live bidirectional connection to the NC Immunization Registry (NCIR), allowing for automated reporting from entry into the EHR patient record directly to the NCIR, as well as query capability through the

immunization forecasts and histories from the public health immunization registry/immunization information system (IIS).
Measure 2 – Syndromic Surveillance Reporting: The EP/EH/CAH is in active engagement with a PHA to submit syndromic surveillance data from an urgent care setting.
Measure 3 – Electronic Case Reporting: The EP/EH/CAH is in active engagement with a PHA to submit case reporting of reportable conditions.
Measure 4 – Public Health Registry Reporting: The EP/EH/CAH is in active engagement with a PHA to submit data to public health registries.
Measure 5 – CDR Reporting: The EP/EH/CAH is in active engagement to submit data to a CDR.
***EH Only:* Measure 6** – Electronic Reportable Laboratory Result Reporting: The EH/CAH is in active engagement with a PHA to submit electronic reportable laboratory (ELR) results.

EHR or NC HealthConnex Clinical Portal to the NCIR to pull vaccination history and recommendations.

- **Public Health Registry Reporting:** All connected NC HealthConnex participants, once live, automatically submit data to the NC Diabetes Registry. NC HealthConnex provides documentation to this end for provider records/audit logging. The NC CSRS will be declared a registry for PI reporting in 2019, and connection through NC HealthConnex will provide another option to satisfy this requirement.
- **Electronic Reportable Laboratory Result Reporting:** Reporting through NC HealthConnex live/available. Hospital laboratories may submit their ELR daily batches via NC HealthConnex to NC DPH.

The onboarding efforts described under this I-APDU includes all Medicaid provider types, including those not eligible for incentive payments under the EHR Incentive Program, but nonetheless aligned with supporting Promoting Interoperability—per State Medicaid Director Letter #16-003, this includes "behavioral health providers, substance abuse treatment providers, long-term care providers (including nursing facilities), home health providers, pharmacies, laboratories, correctional health providers, emergency medical service providers, public health providers, and other Medicaid providers, including community-based Medicaid providers."[15] As noted repeatedly in this I-APDU and in State Medicaid Director Letter #16-003, the connection of these other provider types to NC HealthConnex will enable transitions of care between those parties and NC Medicaid EPs and EHs, facilitating their attainment of the Health Information Exchange objective, now and in the future.

Goals and Objectives of Medicaid Provider Onboarding and NC HealthConnex Enhancements

With the HIE I-APDU Version 2.0 (approved May 21, 2019), NC Medicaid proposed accelerating the onboarding of NC Medicaid providers across 1,795 connections representing 3,000+ facilities to NC HealthConnex by assisting them with one-time integration costs and workflow training. "Onboarding" is defined as a one-time activity to bring a health care facility live on NC HealthConnex, or onto a new feature of NC HealthConnex, and includes the design, development and implementation of technical interfaces, as well as training for providers and facility staff to integrate utilization of NC HealthConnex and its features into their practice workflows. The HIE I-APDU Version 2.0 also proposed various enhancements to NC HealthConnex to better support NC Medicaid Advanced Medical Homes, combat opioid misuse statewide, and improve public health interoperability. The table below summarizes the overarching goals and objectives of these efforts, to be carried out by the NC HIEA and its training and technical contractors.

[15] Centers for Medicare and Medicaid Services State Medicaid Director Letter # 16-003

Table 11: Goals and Objectives of Continued Medicaid Provider Onboarding and NC HealthConnex Enhancements

Goal A: Educate NC Medicaid providers about NC HealthConnex and available onboarding assistance	
Objective 1	**Continue a targeted outreach campaign** touching all 60,000+ NC Medicaid providers and their EHR vendors
Objective 2	**Engage stakeholders** directly and through advocacy groups representing targeted providers
Objective 3	**Leverage statewide events** (meetings, conferences, collaboratives) sponsored by partner organizations
Goal B: Increase enrollment in and use of NC HealthConnex	
Objective 1	**Obtain signed PAs representing at least 90% of identified Medicaid providers** by legislated deadline(s)
Objective 2	**Connect* 80% of Medicaid NC HealthConnex applicants within 180 days** of receiving signed agreements
Objective 3	**Provide a multi-pronged training program** (web-based, virtual live, and onsite) to increase use of HIE
Goal C: Support NC Medicaid providers in meeting the requirements of Promoting Interoperability Stage 3	
Objective 1	As a joint effort with NC Medicaid, **provide educational media on meeting PI with NC HealthConnex**
Objective 2	As a joint effort with NC Medicaid, **create and conduct a training program on meeting PI with NC HealthConnex**
Objective 3	**Provide PI reporting and documentation** to NC HealthConnex participants for use in PI attestation/audit
Objective 4	**Facilitate electronic transitions of care** by recruiting providers within the health care ecosystems of Medicaid-serving NC HealthConnex participants
Goal D: Support NC Medicaid providers in achieving their State-mandated connection* to NC HealthConnex	
Objective 1	Together with NC Medicaid, i**ncrease awareness of the connection requirement** among NC Medicaid providers
Objective 2	Together with NC Medicaid, **connect* all signed participants per Goal B above**
Objective 3	Together with NC Medicaid, continue to **educate the NC General Assembly** about the operational challenges and benefits of connecting the state's Medicaid providers to NC HealthConnex
Goal E: Support NC Medicaid Advanced Medical Homes in their data-sharing needs	
Objective 1	**Produce a consolidated CCD across HIE encounter data** to increase efficient use of NC HealthConnex and better inform clinical decision-making
Objective 2	**Enable and test FHIR capability** with ONC testing tools and EHRs with a large Medicaid provider footprint
Goal E: Support NC Medicaid Advanced Medical Homes in their data-sharing needs	
Objective 3	Together with NC Medicaid, continue to **develop and refine NC*Notify event notifications** to include enhanced delivery mechanisms, additional content, and eventually, smart content targeted at Medicaid provider data needs
Objective 4	**Increase NC*Notify enrollment** such that the service monitors at least 1M patients by December 2019 and at least 2.5M patients by December 2020 statewide
Goal F: Support opioid misuse and prevention across North Carolina	

Objective 1	Build the capability to **access CSRS reports within a NC HealthConnex integrated participant's EHR**
Objective 2	At a provider's request, **include CSRS data in NC*Notify event notifications** to help providers act quickly on identified opioid and substance use disorder issues with their patients
Objective 3	Without a provider's specific request, **build clinical intelligence to include CSRS data in NC*Notify smart event notifications** whenever relevant to help providers act quickly on identified opioid and substance use disorder issues with their patients
Objective 4	Support the PDMP program with administrative and implementation costs to **expand access via EHR connectivity to Medicaid providers**
Goal G: Leverage NC HealthConnex to support the State Laboratory of Public Health's transition from paper to electronic orders and results	
Objective 1	Together with NC DPH, **build a bidirectional interface between NC HealthConnex and the State Lab of Public Health**
Objective 2	Together with NC DPH, **onboard Medicaid providers to submit lab orders and receive results electronically with the State Lab of Public Health**

**A provider is "connected" when patient clinical and demographic information from their EHR pertaining to services paid for by Medicaid and other State-funded health care programs are being sent to NC HealthConnex at least twice daily, either through a direct connection to NC HealthConnex or via a larger health system, HIE, or cloud-based EHR with which s/he participates.*

When onboarding new facilities to NC HealthConnex, the NC HIEA leverages technical and operational efficiencies wherever possible. Examples of these efficiencies include using open source tools; working with EHR vendors directly to model new connections after previously built interfaces; leveraging the replicability of cloud-based EHR integrations by conducting outreach jointly with vendors to other NC users of those technologies to expand impact; and connecting large health systems and HIEs where a single connection links tens or even hundreds of facilities/providers. The NC HIEA together with its technical vendor, SAS Institute, will ensure that any existing technologies or systems that can be reused are leveraged. Under no circumstances will HITECH funds be used to purchase EHR licenses, either on behalf of providers or for the HIE's testing or training purposes.

To more accurately quantify the effort and associated costs of connecting the state's Medicaid providers to the HIE and its services, NC Medicaid together with the NC HIEA has estimated the unique facilities or actual connections those providers represent. The table below details these proposed connections and associated technical integration costs for funding under this I-APDU. The NC HIEA notes for CMS that it anticipates requiring additional HITECH funding to meet its "integration" connection estimates and is in process of developing additional strategies to address challenges with the "long tail' of providers who have older EHR systems, little to no technical resources on site, and will need more focused attention and technical configurations to complete connections.,. Assumptions for the figures provided in the table below include:

1. NC HIEA's provider-entity resolution workstream reports approximately 72,453 unique providers serving Medicaid patients across North Carolina as of March 31, 2020. Of those, approximately 52,000 have an affiliation with an organization. While NCTracks, NC Medicaid's MMIS, notes approximately 20,000 Medicaid-serving organizations, that number drops to approximately 10,000 when de-duplicating for entities tied to the state's six largest health systems (University of North Carolina, Atrium Health (previously Carolinas HealthCare System), Mission Health System, Vidant, Duke and Novant; each of which is already connected via a single integration to NC HealthConnex). Taking into account those already connected; market consolidation trends;

providers without EHRs; provider types that have been given extended connection deadlines per NCGS § 90-414.4, as amended by NC Session Law 2018-41, Section9.(a); and technical vendor capacity; NC Medicaid and the NC HIEA estimated connecting over 3,000 new facilities across 1,795 connections during the two-year period covered in this I-APDU. With subsequent changes to the legislation moving some required provider types to voluntary and as of March 2020 the COVID-19 pandemic, these projections may be impacted. A subsequent IAPD-U will address these challenges with strategies to meet Medicaid and the NC HIEA's goal of creating statewide exchange across the Medicaid provider population in both urban and rural areas of the state.

2. Of 135 NC hospitals, 113 are connected to NC HealthConnex as of May 2020. The below projection includes the remaining North Carolina Medicaid serving hospitals, in addition to an estimated 2-4 per quarter out-of-state hospitals bordering NC that serve a high volume of NC Medicaid patients. Note that due to consolidation under large integrated health care systems (six large and many mid-sized and smaller), the NC HIEA has been able to connect 90+% of Medicaid-serving hospitals in approximately half the number of connections and has brought live thousands of physician practices and other facility types that share health system EHRs.
3. Local health departments, federally qualified health centers, and other ambulatory sites providing a variety of health care services have been included in the "Independent Physician Practices & Other Ambulatory Facilities" category/count.
4. For cloud-based EHRs, the "One-Time Integration Cost" column is an average estimated cost per facility which includes both the initial integration work between NC HealthConnex and the cloud-based EHR hub, as well as the costs to onboard each facility to the hub. The quantity estimate comes from totaling NC customer counts from cloud-based EHR vendors with a large NC footprint with which the NC HIEA is working (including Allscripts, athenahealth, Quest, Greenway, CureMD, Office Practicum, and others).
5. For all facility types, integration fees are based on total average costs to build standard HL7 ADT and CCD interfaces for each instance (XDR/visual integration within the EHR, where vendor technology allows), including parsing discrete data and populating the NC HealthConnex longitudinal record, and where applicable, the required interfaces and EHR visual integration for PI-compliant public health connectivity.
6. All NCIR interfaces will be fully bidirectional and allow automated reporting of immunizations entered in the EHR to the NCIR, as well as query capability of the NCIR from within the EHR to retrieve vaccination history and recommendations and allow such data to be added to a patient record within the EHR, unless limited by EHR functionality.
7. ELR interfaces are priced and projected per hospital, even for those hospitals that are part of larger health system connections, as each hospital must submit to and test with the Division of Public Health independently to meet its PI reporting obligation. The cost represents work atop the one-time integration cost listed for hospitals and health systems (which sets up the actual connection) and represents the full testing and onboarding process between the hospital, the NC HIEA, and the Division of Public Health. The number of ELR connections listed represents those projected to not yet be electronically reporting lab results to the Division of Public Health either directly or via NC HealthConnex as of Q1 FFY 2019.
8. To enable more robust patient record access for NC Medicaid patients living near state borders and/or accessing care outside of their communities due to travel, natural disasters, or other emergency situations, NC HealthConnex will connect to neighboring state and other in-state HIEs.
9. Although not technically a Medicaid provider, the U.S. Department of Defense (DOD) is counted as a Health System under this effort, with plans to build a bidirectional interface with NC

HealthConnex in 2019. Fort Bragg in Fayetteville, North Carolina, is home to approximately 57,000 military personnel and 23,000 military family members, making it one of the largest military complexes in the world.[16] Many of these military members and their families, and those before them, are covered by Medicaid at some point after their service commitments have ended. Research by the Henry J Kaiser Family Foundation in 2015 indicated that one in 10 veterans ages 19-64 was covered by Medicaid, many of whom have complex health needs; and in North Carolina, 27,055 veterans were on Medicaid and 26,680 more were uninsured, and thus potential candidates for Medicaid.[17] These veteran patients, and their families, have records in the DOD EHR that will be critically important for Medicaid providers to access at the point of care, and assist Medicaid EPs and EHs with their performance on PI Objective 8 related to HIE.

10. Although not technically a Medicaid provider, North Carolina prison health services (as well as two rehabilitative centers and three probation violation centers) are counted as a single Ambulatory Facility (On-Premise) connection under this effort, with plans to build a bidirectional interface with NC HealthConnex in 2020. North Carolina currently houses more than 37,000 inmates across 55 state prisons,[18] with many more incarcerated in jails and juvenile detention facilities statewide. It is state policy for inmates housed in prisons to be screened for Medicaid eligibility upon initial processing, and if eligible, Medicaid is billed for emergent or other care received outside the facility during their prison stay.[19] Many will also be enrolled in Medicaid upon their release back into the community. For this reason, the patient data housed in the EHR used in these 60 correctional health services centers will be critically important for Medicaid providers to access at the point of care when treating current or former inmates and will assist Medicaid EPs and EHs with their performance on PI Objective 8 related to HIE.
11. Each count of "FHIR Resource Testing" entails successful testing of at least one FHIR resource on an EHR public server. Note, EHRs with a large Medicaid-serving footprint in North Carolina that demonstrate readiness for this type of testing will be prioritized.
12. Instances of onboarding Medicaid-serving NC HealthConnex participants to the other new services proposed in this I-APDU (Consolidated CCD, NC*Notify, integrated CSRS access within a provider EHR, and orders and results with the State Laboratory of Public Health within a provider EHR) as noted are anticipated to be initially implemented with large Medicaid-serving health systems, hospitals and cloud-based EHRs. Consequently, each "instance" will likely enable these features for multiple (sometimes hundreds or even thousands of) Medicaid providers.

[16] https://www.bragg.army.mil/index.php/about/fort-bragg-history

[17] Medicaid's Role in Covering Veterans. Kaiser Family Foundation, June 29, 2017. https://www.kff.org/infographic/medicaids-role-in-covering-veterans/

[18] https://www.ncdps.gov/adult-corrections/prisons

[19] https://files.nc.gov/ncdps/div/Prisons/HealthServices/CC_ContinuityPatientCare/cc14.pdf

Table 12: Technical Integration Costs for Onboarding Facilities Serving Medicaid Patients to NC HealthConnex and Enhanced Services, Q4 FFY 2019-Q4 FFY 2021

	Estimated Quantity	One-Time Integration Cost	Total Integration Costs
Hospitals/Health Systems/HIEs- ADT and CCD	45	$24,000	$1,080,000
Independent Physician Practices & Other Ambulatory Facilities- ADT and CCD (Cloud)	1,200	$5,000	$6,000,000
Independent Physician Practices & Other Ambulatory Facilities- ADT and CCD (On-Premise)	550	$20,000	$11,000,000
Bidirectional NC Immunization Registry (Per Facility, Any Type)	450	$8,000	$3,600,000
Electronic Lab Reporting (Per Individual Hospital Facility)	84	$6,000	$504,000
FHIR Resource Testing (Per Instance)	6	$48,000	$288,000
Consolidated CCD (Per Instance)	32	$5,000	$160,000
NC*Notify (Per Instance)	110	$5,000	$550,000
SLPH Orders/Results (Per Instance)	10	$18,000	$180,000
Total	**2487**		**$23,362,000**

Table 13: Anticipated Contracted Services and Costs for Onboarding Facilities Serving Medicaid Patients to NC HealthConnex and HIE Enhancements, by Quarter FFYs 2019-2021

Service	Q4 FFY19	Q1 FFY20	Q2 FFY20	Q3 FFY20	Q4 FFY20	Q1 FFY21	Q2 FFY21	Q3 FFY21	Q4 FFY21	Total
NC HealthConnex Training Program with NC AHEC	$396,252	$336,252	$336,252	$336,252	$336,252	$336,252	$336,252	$336,252	$336,252	**$3,086,268**
HIE Enhancements to Support Medicaid AMHs:										
1. **FHIR enablement**	$0	$0	$76,800	$0	$0	$0	$0	$0	$0	**$2,080,000**
2. **Consolidated CCD**	$0	$0	$160,000	$0	$0	$0	$0	$0	$0	
3. **NC*Notify Releases 3 & 4**	$0	$0	$0	$921,600	$0	$921,600	$0	$0	$0	
State Lab of Public Health Integration: **Initial build and connections of Medicaid health system/hospital and ambulatory facility**	$0	$0	$0	$0	$0	$0	$379,200	$0	$0	**$379,200**
Total Cost by Quarter	**$396,252**	**$336,252**	**$573,052**	**$1,257,852**	**$336,252**	**$1,257,852**	**$715,452**	**$336,252**	**$336,252**	**$5,545,468**

The NC HIEA will track progress toward the seven goals described in *Table 11* through quarterly progress reports to NC Medicaid on efforts toward the underlying objectives, and data on total facilities connected and total integration and enhancement costs. The progress reports will also include total Medicaid facilities connected to NC HealthConnex and onboarded to each of the public health reporting and other new services/features as described herein.

To take advantage of onboarding assistance, NC Medicaid providers and HIEs supporting NC Medicaid patients and providers will have to:

1. Sign a Participation Agreement (PA) with the NC HIEA;
2. Provide documentation of their technical readiness to connect with NC HealthConnex;
3. Attest to being eligible for the EHR Incentive Program OR committing to support EPs and EHs by using NC HealthConnex for care transitions;
4. Complete system test and acceptance within six months of submitting a signed PA; and
5. Acknowledge receipt of NC HealthConnex training packet within 12 months of submitting a signed PA, and before go-live.

Failure to meet any of the above conditions would prevent the Medicaid-serving provider/entity from completing the connection process. Exceptions may be made on a case-by-case basis if circumstances are outside of the provider/entity's control (e.g., vendor delays).

4 Statement of Alternative Considerations

NC-MIPS Considerations

In June and July of 2010, North Carolina OMMISS undertook an effort to develop a High-level Definition and Alternative Analysis of NC-MIPS. That document was the basis for much of the information noted above in terms of requirements, functionality, components, and high-level architecture. The conclusion of the analysis was that none of the other state or vendor efforts to create a state-level incentive payment solution were far enough along to either evaluate or estimate effort of trying to share components to meet a deadline of August 26, 2010 for CMS interface testing. Therefore, OMMISS decided to move forward with a fast-track design and development effort for NC-MIPS.

In the fall of 2011, NC Medicaid developed another alternatives analysis to examine systems and development options moving forward with Phase 3 and beyond of NC-MIPS. After careful consideration of the opportunities afforded by each approach, NC Medicaid and OMMISS decided to bring all NC-MIPS future development in-house at OMMISS/NC Medicaid and explore leveraging parts of Kentucky's incentive payment solution to enhance and improve the current NC-MIPS. After further research in early 2012, NC Medicaid found Kentucky's solution to be a whole-system replacement and opted to move forward instead with planned NC-MIPS enhancements.

In April 2012, NC Medicaid assumed management of technical development for NC-MIPS from OMMISS. By this time, the NC Medicaid HIT team was fully staffed and both organizations determined it would be more efficient and cost-effective to maintain and enhance NC-MIPS alongside other program staff. This cost savings is reflected in the sharp decrease in MMIS funds requested (largely in the vendor costs category) in Appendix A of this I-APD. At that point, the HITECH funding request was adjusted upward in the contract staff and hardware/software line items to accommodate these activities, but at a much lower overall cost.

HIE Considerations

North Carolina's HIE I-APD (Version #20120113) provides an extensive Statement of Alternative Considerations regarding the initial development of the statewide HIE model as a statewide network of networks (then called "Qualified Organizations," or "QOs"), built on a hosted shared statewide services architecture. The statewide HIE network has since undergone two governance transitions—first under a local, non-profit entity called Community Care of North Carolina that acts as NC Medicaid's care management arm (February 1, 2013), and later under a new state agency, the NC HIEA (February 29, 2016). It has also moved away from the QO model due to lack of market interest, and toward directly connecting any entity that applies, from individual physician practices to large health systems.

Despite these changes, many things remain the same today as they were at the launch of the statewide HIE network in 2012. These include the architectural design and the nature of the HIE, though now officially under state governance, as a public-private partnership with SAS Institute investing in the project and providing the technology service. Section B.2 on page 71 of Version 4.3 of the NC SMHP (approved

October 3, 2018) includes a description of the governance, technical, and strategic approaches of the HIE under state governance at the NC HIEA.

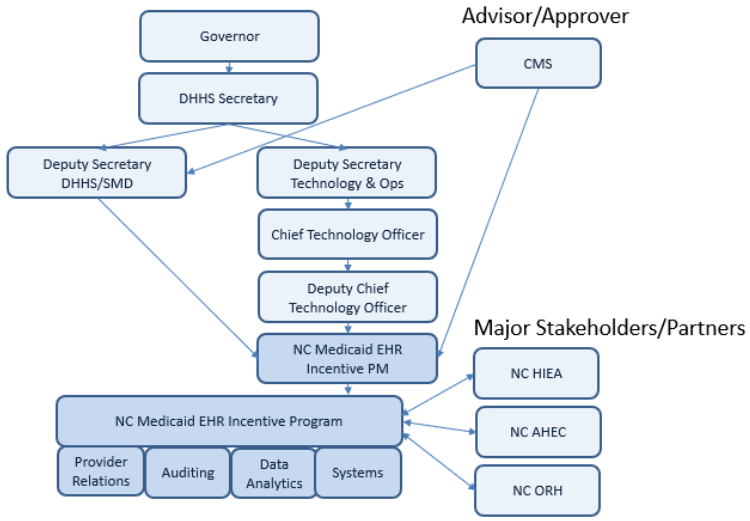
5 Personnel and Contract Resource Statement

NC DHHS staffs HIT initiatives with state resources tasked in a combination of full and part time to projects. DHHS staff makes up all of personnel contributing to administration and oversight of the NC Medicaid EHR Incentive Program. NC Medicaid's Director, along with the Director of Health IT and the HIT Program Manager, provides executive project management support and represents the project to executive staff.

Additional DHHS staff in Program Integrity, Finance, Budget Management, and Information Technology, provides program support in the areas of outreach, policy, reporting, operations, management, and oversight.

The figure below depicts the organizational structure for the Medicaid HIT Program in the context of the NC Department of Health and Human Services.

Figure 5: North Carolina HIT Organizational Structure within DHHS



Staffing Requirements

Resource requirements to administer the NC Medicaid EHR Incentive Program include a combination of NC DHHS full-time and part-time staff. The table below presents a list of state staffing requirements through FFY 2021. When short-term technical resources are needed for the NC-MIPS development effort at NC Medicaid, requisitions occur via the NC Statewide IT Procurement Short Term IT Staffing Contract.

In addition to state personnel, DHHS has in the past employed contractors for incentive payment system support. In 2017, DHHS streamlined technical staff and converted two key positions to state staff to manage updating and ongoing maintenance of NC-MIPS. Since December 2017, there have been no contractors employed with the Program, though it is possible that contractors may be needed at some point within FFYs 2021-2022 if State staff attrition becomes an issue. If so, funds budgeted for State staff will be used to backfill with contractors.

Staffing costs related to accelerating Medicaid provider onboarding to NC HealthConnex and enhancements to NC HealthConnex to support Medicaid transformation efforts, statewide opioid misuse prevention, and improved public health interoperability in North Carolina, are also included below.

Note that all state staff are dedicated to the work described in this I-APDU, and the percentage time noted is representative of the effort attributed to the activities described herein only.

Table 14: State Staffing Requirements

State Staff Title	Description of Responsibilities	% Time	Annual Program Hours	Annual Cost with Benefits	Q4 FFY 2019-Q4 FFY 2021 Cost with Benefits	FFY 2022
Administration Support	Oversees NC Medicaid and Clinical Policy activities	0.01	66	$4,780	$10,754	$4,780
Hearings and Appeals	Conducts impartial informal hearings and appeals for NC Medicaid EHR Incentive Program participants	0.07	1673	$58,748	$132,184	$58,748
Financial/Accounting/Audit Support	Provides budget and accounting support for Program participants and OHIT financials	0.07	1669	$90,058	$202,630	$90,058
Contracts/Purchasing Support	Provides support for Program and OHIT contracts and purchase orders	0.03	766	$31,240	$70,290	$31,240
IT Security/MMIS/Facilities Support	Provides IT-related support including security and facility maintenance	0.01	103	$3,977	$8,949	$3,977
HIT Program Manager	Oversees NC Medicaid EHR Incentive Program administration and coordinates related OHIT projects	1	2080	$132,654	$298,472	$132,654
HIT .NET Developer/Bus & Tech Appl Spec	Lead technical resource for NC-MIPS and AVP, responsible for software building, release management, and developer testing	1/.05	2080	$132,041	$297,092	$66,020
HIT Data Specialist/Bus Systems Analyst	Designs and leads HIT data analytics; completes CMS transactions and annual report	1	2080	$112,363	$252,817	$112,363
HIT System Manager/Bus Systems Analyst	Manages server maintenance and upgrade; coordinates NC-MIPS/AVP enhancement; performs QA testing	1	2080	$120,595	$271,338	$120,595
HIT Business Analyst/Bus System Analyst	Creates NC-MIP and AVP docs for developers and users, responsible for system updates and performing QA testing	1	2080	$120,595	$271,338	$120,595
HIT Communications Specialist	Crafts and executes HIT Communication Plan; including website & outreach	1	2080	$71,729	$161,390	$71,729
HIT Provider Relations	Heads up help desk; conducts HIT outreach; performs pre-payment validations for Incentive Program	1	2080	$89,065	$200,396	$89,065
HIT Audit Manager	Creates and implements pre- and post-payment audit processes for Incentive Program; risk analysis	1	2080	$89,065	$200,396	$89,065
HIT Program Integrity Investigator	Implements pre- and post-payment audit processes for HIT	1	2080	$80,158	$180,356	$80,158
HIT Program Integrity Investigator	Implements pre- and post-payment audit processes for HIT	1	2080	$80,158	$180,356	$80,158
HIT Program Integrity Investigator	Implements pre- and post-payment audit processes for HIT	1	2080	$75,705	$170,336	$75,705
OHIT Director	Coordinates HIT efforts in NC; works closely with NC HIEA and HIT stakeholders	1	2080	$210,872	$474,462	$210,872
OHIT Technology Lead	Advises on technology infrastructure decisions related to integrating state systems with the NC HIE	0.75	1560	$119,760	$269,460	$119,760
OHIT Project Manager	Manages a diverse portfolio of state HIT initiatives	0.5	1040	$53,449	$120,260	$53,449
OHIT Communications Specialist/Webmaster	Designs, implements, and manages the enhanced state HIT website	0.75	1560	$106,227	$239,011	$106,227
HIT Subtotals				**$1,783,239**	**$4,012,288**	**$1,717,219**
Executive Director, NC HIEA	Directs and oversees the statewide HIE, NC HealthConnex. Responsible for overall business operations and the direction and leadership toward the achievement of the NC HIEA's mission, vision, values, strategy, goals and direction.	0.2	416	$32,742	$73,670	N/A
Assistant Director & Analytics Manager, NC HIEA	Directs and oversees NC HIEA technology functions carried out by the technical contractor, and oversees the technical vision and strategy for NC HealthConnex. Supervises public health initiatives and connections to other state systems and external data sources. Acts as the principal subject matter expert on HIE technical capabilities and processes.	0.5	1040	$79,121	$178,022	N/A
Assistant Attorney General, NC Department of Justice/NC HIEA	Advises on NC HIEA policies and legal agreements with technical vendors, NC HealthConnex participants, EHR vendors, and other parties. Renders opinions on the legality and propriety of agency rules and regulations and advises NC HIEA decision-makers on interpretation of laws and proper courses of legal action and on the revision of existing statutes. Represents the NC HIEA in hearings and investigations in administrative proceedings and in litigation before courts.	0.25	520	$31,250	$70,313	N/A
Finance/Budget Analyst, NC HIEA	Responsible for performance of all aspects of fiscal management of the NC HIEA, to include budgeting, appropriations, and revenue receipt and expense distribution and accounting. Oversees and performs duties related to contracts, agreements, grants and procurements as assigned.	0.5	1040	$54,160	$121,860	N/A
Communications Manager, NC HIEA	Manages all internal and external communications regarding the NC HIEA and NC HealthConnex. Represents the NC HIEA at stakeholder events, to trade associations and advocacy groups, to the media, across state agencies and to state/federal partners. Coordinates closely with the NC HIEA provider relations, outreach and training teams.	0.5	1040	$35,737	$80,408	N/A

State Staff Title	Description of Responsibilities	% Time	Annual Program Hours	Annual Cost with Benefits	Q4 FFY 2019-Q4 FFY 2021 Cost with Benefits	FFY 2022
Grant Manager, NC HIEA	Responsible for managing the HITECH grant, including writing annual I-APDs/updates, tracking progress against objectives and completing federal and state reporting, exploring additional initiatives for funding, and related tasks as assigned.	0.5	1040	$76,800	$172,800	N/A
Provider Relations Lead, NC HIEA	Oversees day-to-day business operations and systems, office and material management, resolution of escalated participant issues, and external data and information requests. Ensures intra-office coordination on issues and initiatives. Leads team of Provider Relations Specialists in communications with HIE participants.	0.75	1560	$58,151	$130,840	N/A
Provider Relations Specialist, NC HIEA	Serves as the NC HIEA front line customer service point for NC HealthConnex participants and interested providers and provider groups. Processes new participation agreements, and assists with administrative tasks and data requests related to NC HIEA and NC HealthConnex business operations. **1 full-time employee (FTE) allocated at 100%, 2 FTEs allocated at 75% and 1 half-time employee allocated at 100% to the scope herein.*	3	6,240	$163,996	$368,991	N/A
Outreach Specialist, NC HIEA	Responsible for outreach initiatives to specified provider groups: 1 FTE on NC hospitals, representative large health systems and associated ACOs; 1 FTE on primary care, long-term care, and specialist providers; 1 FTE on behavioral health and rural health providers; and 1 FTE dedicated 100% to Medicaid provider outreach and onboarding (all/any provider types). Coordinates with the NC HIEA trainer to develop appropriate training and workflow adjustment materials for these audiences. Coordinates with the NC HealthConnex technical vendor and Help Desk to ensure participant organizations remain engaged through the onboarding process and training program, including onsite training, prior to go-live. *1 FTE allocated at 100% and 3 FTEs allocated at 75% to the scope herein.	3.25	6760	$334,985	$753,716	N/A
Clinician/Training Specialist, NC HIEA	Responsible for NC HIEA provider training program, including overseeing the training contractor to produce training collateral, videos, web presentations, onsite and other trainings for all NC HealthConnex participants. Advises NC HIEA management and the technology vendor on clinical quality/data analytic and value-added initiatives.	0.75	1560	$84,805	$190,811	N/A
Health Analytics Lead, NC HIEA	Manages and oversees the technical vendor's work on the NC HIEA population health and analytics portfolio, including the data quality workstream, NC Diabetes Registry and additional registries, Heart Health Now project and related initiatives. Manages business relationships with EHR vendors.	0.75	1560	$94,085	$211,691	N/A
MPI Quality Assurance Specialist, NC HIEA	Responsible for managing the master patient index (MPI) environment utilized as the foundation for NC HealthConnex analytics and reporting activities. Monitors MPI data quality and works duplicate records, false positives and negatives, manually to ensure MPI data is clean and patient records are consolidated and accurate. **2 FTEs.*	2	4160	$131,060	$294,885	N/A
Implementation Project Manager- Special Initiatives, NC HIEA	This position conducts administrative work in planning, organizing and monitoring value-added initiatives from their inception through implementation. Provides project management and monitoring for various initiatives with the technical vendor.	0.5	1040	$50,000	$112,500	N/A
Business Analyst- New Initiatives, NC HIEA	This position assists with design and business requirements for new development initiatives, including the new interfaces and workflows associated with connection to the State Lab of Public Health, enhancements to NC*Notify, integration with the CSRS, and other initiatives on the *NC HIEA Roadmap 2021*.	0.5	1040	$50,594	$113,837	N/A
Public Health Specialist- Immunization Registry, NC HIEA and NC DPH	Responsible for supporting the full life-cycle of Medicaid provider onboarding to the NC HealthConnex Immunization Registry interface functionality. Coordinates onboarding pipeline (NC HIEA/NC DPH), acts as the main point of contact for providers through the multi-step onboarding process with the NC Immunization Branch and NC HealthConnex. Creates training modules for the functionality per interface scenarios and conducts provider training for using the functionality. *2 FTEs.	2	4160	$238,218	$535,991	N/A

State Staff Title	Description of Responsibilities	% Time	Annual Program Hours	Annual Cost with Benefits	Q4 FFY 2019-Q4 FFY 2021 Cost with Benefits	FFY 2022
Public Health Specialist/Project Manager- State Lab and Electronic Lab Reporting, NC HIEA and NC DPH	This position supports two lab initiatives for the NC HIEA: supporting the full life-cycle of Medicaid hospital onboarding to the NC HealthConnex Electronic Laboratory Reporting (ELR) interface functionality, and managing the State Lab of Public Health (SLPH) integration and onboarding. Coordinates onboarding participant pipeline (NC HIEA/NC DPH), assists with LOINC coding and quality review, and acts as the main point of contact for providers as they navigate the multi-step onboarding process with the NC DPH and NC HealthConnex. Conducts hospital staff training for maintaining the functionality. **3 FTEs.*	3	6240	$363,000	$816,750	N/A
DHSR Emergency Mgmt. PULSE Implementation Consultant (FT)	PULSE Onboarding: project design, development and implementation; identify terminology gaps, work with vendors, onboard eligible entities and providers. Requesting HITECH for FFY2020Q4-FFY2021.	1	2080	$98,781	$122,803	N/A
Data Security & Access Management Analyst (FT)	PULSE Administration of Data Access Rights, Granting, Revoking, Cross-DHHS Analysis & Design of Data Exchange with other HIE, HIT, or tbd DHHS data needs. Requesting HITECH for FFY2020Q4-FFY2021.	1	2080	$124,359	$154,589	N/A
HIE Subtotal				**$2,101,844**	**$4,504,477**	**$0**
Grand Total				**$3,885,083**	**$8,516,765**	**$1,717,219**

HIT/HIE Contracts

In addition to the above state staff, NC Medicaid has engaged with the University of North Carolina at Chapel Hill Area Health Education Centers (AHEC) to perform a variety of support functions for the HIT Program. NC Medicaid executed a contract extension for $2,302,047 for NC State Fiscal Year 2020 (7/1/19-6/30/20). An additional extension for $1,208,400 ($1,087,560 FFP at 90 percent) was submitted May 18, 2020 for CMS review for SFY 2021 to extend ongoing services through June 30, 2021. AHEC's work focuses on helping NC providers achieve MU and attest for the NC Medicaid EHR Incentive Program as well as other HIT activities. For details, see SMHP A.5.2. We are requesting $1,087,560 in FFP for FFY2021 for this work. For personnel resources, the contract includes part-time support from principal investigator, HIT manager, business services coordinator, deputy director of practice support, and programmer in AHEC main office for the state and up to 1.5 FTE technical assistance coach at each of NC's nine regional AHECs.

Contracts for administrative costs related to accelerating Medicaid provider onboarding to NC HealthConnex and enhancements to NC HealthConnex to support Medicaid transformation efforts, statewide opioid misuse prevention, and improved public health interoperability in North Carolina, are detailed below.

NC HIEA negotiated a new two-year contract with SAS Institute which after being approved by CMS, was executed in November 2019 and runs through the end of December 2021. The timeframe of the contract and NC HIEA's prior funding request align to the sunsetting of Federal Funds Participation under HITECH.

Table 15 below details the HITECH funding allocated to contracts under HIE IAPD V 2.0. Note also that the "Main Contract Cost" (dollar figure on the second row) listed in *Table 15* is an annual addition to an existing contract with SAS Institute that is the financial responsibility of the state, paid by annually recurring appropriated funds in the state budget dedicated to NC HealthConnex operations. The "New Addendum Cost" (bottom dollar figure) represents the HITECH and state matching funds for Q4 FFY 2019-Q4 FFY 2021 as proposed in HIE I-APDU Version 2.0 approved May 21, 2019. North Carolina will provide all contacts, addendums and amendments for the NC HIEA and NC DMH/DD/SAS' contracted work to CMS for review and approval prior to their execution by the State.

Table 15: Contracts

Contractor Cost Category	Vendor	Total Contract Cost	Description of Services	CMS Approval Status	Term of Contract
Technical Assistance	North Carolina Area Health Education Centers (NC AHEC)	$1,208,400	Provide direct, local assistance to practices on health IT work including assisting with selection of an appropriate EHR system; guidance on system implementation, security and risk assessments, and system optimization through meeting Promoting Interoperability (PI) and CMS's Quality Payment Program MIPS program requirements	Not yet approved NC-2020-05-18-HITECH-CNTAMEND 34773-AHEC	7/1/2020 - 6/30/2021
Registry - Community Health Workers	UNC Pembroke	$345,558	Establish a statewide NC Community Health Worker data repository and a NC Certified Community Health Worker Registry to aid in understanding the impact of a statewide standardized core competency training and the certification process for NC CHWs and to serve as a resource for employers and other interested stakeholders in finding certified CHWs across the state	Not yet approved NC-05-18-HITECH-CNT-00039673	3/1/2020 - 9/30/2021
Collaborative Data Project - MED	Oregon Health Sciences University's Center for Evidence-based Policy	$155,000	Provide policy-makers the tools and resources to make evidence-based decisions	5/29/2020 NC-2020-05-20-HITECH-CNT-Medicaid Evidence-based Decision Project	6/3/2020 - 12/31/2020
Collaborative Data Project - DERP	Oregon Health Sciences University's Center for Evidence-based Policy	$95,500	Provide concise, comparative, evidence-based products that assist policymakers and other decision-makers facing difficult drug coverage decisions	Not yet approved NC-2020-05-14-HITECH-CNT	execution date - 12/31/2020
Technical Assistance	SAS Institute	$47,840,855	Provide design, development and implementation of enhancements for NC HealthConnex as described in HIE I-APDU Version 2.0. Design, develop and implement interfaces between NC HealthConnex and health care facilities, and provide technical support to those facilities, at the direction of the NC HIEA. Contract is deliverables-based, and total represents rates inclusive of personnel, technology costs, supplies, training, travel, subcontracts, etc.	approved 11/4/2019 NC-2019-10-24-HITECH-IAPD-CNT-SAS	New Addendum: July 1, 2019-Dec. 22, 2019 and Dec. 23, 2019-Dec. 22, 2020, and Dec. 23, 2020-Sept. 30, 2021 (Must follow parent contract renewal terms)
Training Program	North Carolina Area Health Education Centers (NC AHEC)	$3,086,268	Enhance and expand the NC HealthConnex training program, including but not limited to creation of additional training materials; providing onsite and virtual training; and training-the-trainers in regional, community, and health system settings. Includes funding for personnel, supplies, travel, training development, etc.	approved 9/9/2019 NC-2019-08-02-HITECH-CntAmend-MOU	July 1, 2019-Sept. 30, 2021
PULSE	Audacious Inquiry	$75,000	Participate in CMS-led nationwide deployment plan for the health IT disaster response platform known as the Patient Unified Lookup System for Emergencies (PULSE). Contract expenses include: FFY 2020 Q4 fee of $25k/mo FFY 2021 fees	Not yet approved	July 1, 2020 - Sept. 30, 2020
		$700,000		Not yet approved	Oct. 1, 2020 - Sept. 30, 2021
Total		$5,665,726			

6 Proposed Activity Schedule

In the first quarter of FFY 2021, the NC Medicaid Incentive Program will focus on implementing any Final Rule changes and updating NC-MIPS for Program Year 2020 Stage 3 MU. The second quarter of FFY 2021

will be dominated by processing Program Year 2020 attestations, including validations, outreach, and payment. In the third quarter of FFY 2021, we will close out Program Year 2020 and open Program Year 2021. Though outreach is always ongoing, we conduct special outreach projects in the fourth quarter to encourage participation and provide program updates.

In FFY 2022, we will focus on program close-out and continue post-payment audits.

The high-level project plan for HIT-related program and system activities for FFYs 2020-2022 is shown below. More detail on these initiatives can be found in Section 3 of this I-APDU and in North Carolina's SMHP.

Table 16: High Level Activity Schedule FFYs 2020-2022

Task	Start	Finish	FFY 2020	FFY 2021	FFY 2022
Incentive Program's NC-MIPS and Attestation Validation Portal (AVP)					
System updates as required by CMS	2011	09/2022			
Post-payment audit tracking through AVP	2013	09/2022			
Enhancement of NC-MIPS documentation	2013	10/2021			
NC-MIPS open for Prog Year 2019	05/2019	08/2020			
Prog Year 2019 validations (AVP)	05/2019	06/2020			
System updates for Program Year 2020	11/2019	04/2020			
NC-MIPS open for Prog Year 2020	05/2020	04/2021			
Prog Year 2020 validations (AVP)	05/2020	08/2021			
System updates for Program Year 2021	11/2020	04/2021			
NC-MIPS open for Prog Year 2021	05/2021	10/2021			
Prog Year 2021 validations (AVP)	05/2021	11/2021			
Incentive Program Oversight & Outreach					
Provider outreach via help desk	11/2010	09/2022			
Pre-payment validation outreach	02/2011	10/2021			
Enhancement of program website	2013	09/2022			
Enhancement and maintenance of MIPS2 db (SLR)	2013	12/2021			
Post-payment audting	02/2013	09/2023			
Prog Year 2019 audit awareness outreach	05/2019	08/2020			
Audit strategy update	04/2020	05/2020			
SMHP and IAPD update	05/2020	07/2020			
Prog Year 2020 audit awareness outreach	05/2020	08/2021			
Previous calendar year PV outreach for 2020	07/2020	07/2020			
Returning meaningful user outreach for 2020	07/2020	08/2020			
Audit strategy update	04/2021	05/2021			
SMHP and IAPD update	05/2021	07/2021			
Returning meaningful user outreach for 2021	07/2021	08/2021			
Environmental scan	08/2021	10/2021			
Decomission NC-MIPS	12/2021	12/2021			
Program Close-out	01/2022	09/2022			
Other HIT Projects					
NC AHEC	2014	10/2021			
MED/DERP	2014	06/2020			
NC ORH	2017	12/2021			
HIE Projects					
Recruit and train expanded NC HIEA staff	03/2016	12/2019			
Continue NC HealthConnex outreach campaign	07/2016	ongoing			
*Create and send periodic newsletters	07/2016	ongoing			
*Distribute periodic updates through partners	01/2017	ongoing			
*Engage EHR vendors serving Medicaid providers	02/2017	ongoing			
*Finalize 2020 calendar of events	01/2020	04/2020			
*Finalize 2021 calendar of events	01/2021	04/2021			
Enhance NC HealthConnex training program	01/2019	06/2021			
*Enhance/create video modules	07/2019	06/2020			
*Create media on meeting PI reqs with HealthConnex	07/2019	12/2019			
*Launch NC AHEC-NC HealthConnex training help desk	07/2019	12/2019			
*Launch data quality participant review with NC AHEC	07/2019	12/2019			
Connect practices to NC HealthConnex	03/2012	ongoing			
Finalize 2020 provider pipelines for PH onboarding	10/2019	12/2019			
Enhancements to Support Medicaid AMHs	04/2019	10/2020			
*FHIR Enablement	04/2019	01/2020			
*Consolidated CCD	04/2019	01/2020			
*NC*Notify Release 3.0	04/2019	04/2020			
*NC*Notify Release 4.0	11/2019	10/2020			
NC CSRS Integration Phase II	04/2019	04/2020			
Onboard Medicaid providers to the NC CSRS	07/2019	09/2021			
State Lab Integration	03/2020	03/2021			

NC Medicaid anticipates that the NC HIEA will draw down funds through Q4 of FFY 2021 based on actual costs incurred as it continues to onboard providers to NC HealthConnex and achieve the planned system enhancements and onboarding to new services described herein. The projected number of connections per quarter are shown in the table below. NC Medicaid and the NC HIEA will continue reporting progress quarterly to CMS through the end of FFY 2021.

Table 17: Anticipated NC Medicaid Provider Connections, by Quarter Q4 FFY 2019-Q4 FFY 2021

	Q4 FFY19	Q1 FFY20	Q2 FFY20	Q3 FFY20	Q4 FFY20	Q1 FFY21	Q2 FFY21	Q3 FFY21	Q4 FFY21	Total
Health Systems/ Hospitals/HIEs	13	4	4	4	4	4	4	4	4	**45**
Ambulatory Facilities, Cloud EHR Roll-On	200	200	150	150	100	100	100	100	100	**1,200**
Ambulatory Facilities, On-Premise EHR	75	75	75	75	50	50	50	50	50	**550**
Total Connections*	**288**	**279**	**279**	**279**	**154**	**154**	**154**	**154**	**154**	**1,795**
NCIR Connections	50	50	50	50	50	50	50	50	50	**450**
ELR Connections	7	8	9	10	10	10	10	10	10	**84**
FHIR Resource Testing Instances	0	0	0	1	1	1	1	1	1	**6**
Consolidated CCD Instances	0	0	0	2	6	6	6	6	6	**32**
NC*Notify Instances	0	0	0	0	10	25	25	25	25	**110**
SLPH Orders/Results Instances	0	0	0	0	0	0	0	2	8	**10**
Total Public Health/Enhancement Connections	**57**	**58**	**59**	**63**	**77**	**92**	**92**	**94**	**100**	**692**

**Note that these total connections represent a higher number of total facilities (estimated at over 3,000), per assumption 1 on page 30 of this I-APDU.*

7 Proposed Budget

Proposed HITECH Project Budget

NC's total budget for FFY 2021 is estimated at $20,219,871 which includes $18,197,884 (90% Federal share) and $2,063,549 (10% State share). NC's total budget for FFY 2022 is estimated at $1,801,619 which includes $1,621,457 (90% Federal share) and $180,162 (10% State share). The State is requesting $0 in new MMIS IAPD funds, $116,327 in new 90% FFP funding for FFY 2020 Q4, and $ 4,215,293 in new 90% FFP funding for activities for October 2021 - September 2022. The State is carrying over $0 (90% federal funds) in unspent funds for planning activities approved under the State's HIT Planning Advance Planning Document (PAPD).

Table 18: Summary of Administrative HIT Funding Requested for FFYs 2021 - 2022

Covers Federal Fiscal Years 2020 - 2022							
	HIT CMS Share (90% FFP) Admin Funding	State Share (10%)	HIT CMS Share (90% FFP) HIE Funding	State Share (10%)	HIT Enhanced Funding FFP Total	State Share Total	HIT Enhanced Funding Total
	24C & 24D		24C & 24D				
FFY 2020	$5,431,891	$603,543	$16,103,836	$1,789,315	$21,535,727	$2,392,858	$23,928,585
FFY 2021	$4,427,044	$491,894	$14,144,896	$1,571,655	$18,571,940	$2,063,549	$20,635,489
FFY 2022	$1,621,457	$180,162	$0	$0	$1,621,457	$180,162	$1,801,619
Total FFY 2021 Funding Requested in this IAPD-U	**$1,313,010**	**$145,890**	**$0**	**$0**	**$1,313,010**	**$145,890**	**$1,458,900**
Total FFY 2022 Funding Requested in this IAPD-U	**$1,621,457**	**$180,162**	**$0**	**$0**	**$1,621,457**	**$180,162**	**$1,801,619**

Funding for FFY 2020 was approved October 3, 2018. This I-APDU requests new FFY 2020 Q4 funding for PULSE.

The table below includes the amounts from NC-2018-08-14-HITECH-IAPD, NC-2019-05-06-HITECH-IAPD, and NC-2019-07-09-HITECH-IAPD that were already approved plus the new requests covered in this I-APDU.

Table 19: HITECH Detailed Budget Table Covering Federal Fiscal Years 2020 - 2022

	HIT		HIE		HIT + HIE		
	Federal Share (90% FFP)	State Share -10%	Federal Share (90% FFP)	State Share -10%	**Federal Share (90% FFP)**	**State Share -10%**	**Federal + State Grand Total Computable**
	--	--		--	24C & 24D†	--	--
FFY 2020	$5,431,891	$603,543	$14,990,081	$1,665,564	$20,421,972	$2,269,107	**$22,691,079**
FFY 2021	$4,427,044	$491,894	$13,770,840	$1,530,093	$18,197,884	$2,021,987	**$20,219,871**
FFY 2022	$1,621,457	$180,162	$0	$0	$1,621,457	$180,162	**$1,801,619**
Total	$11,480,393	$1,275,599	$28,760,921	$3,195,657	$40,241,314	$4,471,256	**$44,712,569**

The table below lists funding requested for FFY 2020 Q4 through FFY 2022.

Table 20: State Proposed Budget for New Funding Request for FFYs 2020-2022

Activity Type	FFY20 Q4 for PULSE				
	90% Federal Share	75% Federal Share	50% Federal Share	10% State Share	Total
State Personnel	48,827	0	0	5,425	54,252
Vendors	67,500	0	0	7,500	75,000
Total Project Costs	**$116,327**	**$0**	**$0**	**$12,925**	**$129,252**

Activity Type	FFY21				
	90% Federal Share	75% Federal Share	50% Federal Share	10% State Share	Total
State Personnel (PULSE)	200,826	0	0	22,314	223,140
Contracted State Staff	0	0	0	0	0
Hardware & Software Costs (PULSE)	450,000	0	0	50,000	500,000
Direct Non-Personnel Costs	0	0	0	0	0
Vendors/State Partners:					
NC AHEC/REC	1,087,560	0	0	120,840	1,208,400
ORH	0	0	0	0	0
MED & DERP	225,450	0	0	25,050	250,500
HIT Conference	0	0	0	0	0
Audacious Inquiry (PULSE)					700,000
Total Project Costs	**$1,963,836**	**$0**	**$0**	**$218,204**	**$2,182,040**

Activity Type	FFY22 for Incentive Program Administration				
	90% Federal Share	75% Federal Share	50% Federal Share	10% State Share	Total
State Personnel	1,545,497	0	0	171,722	1,717,219
Hardware & Software Costs	7,560	0	0	840	8,400
Direct Non-Personnel Costs	68,400	0	0	7,600	76,000
Total Project Costs	**$1,621,457**	**$0**	**$0**	**$180,162**	**$1,801,619**

Approved, expended, and remaining I-APD HITECH funds for FFY 2019 are summarized in the table below.

Table 21: HIT Funding for FFY 2019 (approved October 3, 2018)

Activity Type	Approved I-APD		
	State	Federal	Total
State Personnel	178,324	1,604,916	1,783,240
Contracted State Staff	0	0	0
Hardware & Software Costs	9,135	82,215	91,350
Direct Non-Personnel Costs	7,600	68,400	76,000
Vendors/State Partners:			
NC AHEC/REC	230,205	2,071,842	2,302,047
ORHHC	145,488	1,309,393	1,454,881
MED & DERP Projects	24,850	223,650	248,500
HIT Conference	5,000	45,000	50,000
Total Projected Costs	**$600,602**	**$5,405,416**	**$6,006,018**
Activity Type	**I-APD Expenditures**		
	State	**Federal**	**Total**
State Personnel	90,848	817,632	908,480
Contracted State Staff	0	0	0
Hardware & Software Costs	840	7,560	8,400
Direct Non-Personnel Costs	2,941	26,467	29,408
Vendors/State Partners:			
NC AHEC/REC	132,276	1,190,486	1,322,762
ORHHC	42,846	385,618	428,465
MED & DERP Projects	25,050	225,450	250,500
HIT Conference	3,500	31,500	35,000
Total Expenditures	**$298,302**	**$2,684,714**	**$2,983,015**
Activity Type	**Remaining I-APD Funding**		
	State	**Federal**	**Total**
State Personnel	87,476	787,284	874,760
Contracted State Staff	0	0	0
Hardware & Software Costs	8,295	74,655	82,950
Direct Non-Personnel Costs	4,659	41,933	46,592
Vendors/State Partners:			
NC AHEC/REC	97,928	881,356	979,285
ORHHC	102,642	923,775	1,026,416
MED & DERP Projects	-200	-1,800	-2,000
HIT Conference	1,500	13,500	15,000
Total Funding Remaining	**$302,300**	**$2,720,702**	**$3,023,003**

Approved, expended, and remaining I-APD HITECH funds for FFY 2020 (as of 3/31/2020) are summarized in the table below.

Table 22: I-APD HITECH Funding Summary for FFY 2020 as of 3/31/2020 (approved October 3, 2018)

Activity Type	Approved I-APD		
	State	Federal	Total
State Personnel	178,324	1,604,915	1,783,239
Contracted State Staff	39,728	357,552	397,280
Hardware & Software Costs	9,592	86,326	95,918
Direct Non-Personnel Costs	7,600	68,400	76,000
Vendors/State Partners:			
NC AHEC/REC	230,205	2,071,842	2,302,047
ORHHC	145,488	1,309,393	1,454,881
MED & DERP Projects	27,335	246,015	273,350
HIT Conference	5,000	45,000	50,000
Total Projected Costs	**$643,272**	**$5,789,444**	**$6,035,435**
Activity Type	**I-APD Expenditures**		
	State	**Federal**	**Total**
State Personnel	38,360	345,240	383,600
Contracted State Staff	0	0	0
Hardware & Software Costs	77	694	771
Direct Non-Personnel Costs	158	1,422	1,580
Vendors/State Partners:			
NC AHEC/REC	131,621	1,184,585	1,316,206
ORHHC	22,432	201,886	224,318
MED & DERP Projects	0	0	0
HIT Conference	450	4,050	4,500
Total Expenditures	**$193,098**	**$1,737,878**	**$1,930,976**
Activity Type	**Remaining I-APD Funding**		
	State	**Federal**	**Total**
State Personnel	139,964	1,259,675	1,399,639
Contracted State Staff	39,728	357,552	397,280
Hardware & Software Costs	9,515	85,632	95,147
Direct Non-Personnel Costs	7,442	66,978	74,420
Vendors/State Partners:			
NC AHEC/REC	98,584	887,257	985,841
ORHHC	123,056	1,107,506	1,230,563
MED & DERP Projects	27,335	246,015	273,350
HIT Conference	4,550	40,950	45,500
Total Funding Remaining	**$450,174**	**$4,051,566**	**$4,501,740**

7.1.1 Total Funding Request

A HITECH project cost of $1,801,619 (FFP $1,621,457 at 90%) is estimated to support the Medicaid EHR Incentive Program and HIT activities for FFY 2022. Incentive payment projections for FFYs 2020-2021 can be found in Appendix B of this I-APDU. This I-APDU also requests $116,327 in 90% FFP for FFY 2020 for PULSE, $1,313,010 in 90% FFP for FFY 2021 for AHEC and MED/DERP contracts, and $1,280,826 in 90%FFP for FFY 2021 for PULSE. NC DHHS certifies that it has available its share of the funds required to complete the activities described in this I-APD. The state requests approval to proceed with federal funding at the below levels.

Table 23: Total New Federal Funding Request for FFYs 2020 - 2022

	MMIS @ 90% FFP	HITECH @ 90% FFP	HITECH @ 100% FFP (incentive payments)	Total
FFY 2020	$0	$116,327	$0	$116,327
FFY 2021	$0	$2,143,836	$0	$2,143,836
FFY 2022	$0	$1,621,457	N/A	$1,621,457

Budget Assumptions

The following budget assumptions were made in compiling the projected cost of the NC Medicaid HIT Program:

- Only costs associated with activities and functionalities addressed in North Carolina's SMHP are included in this I-APD. To the extent possible, existing state staff is utilized. Travel costs have been included for various stakeholder and professional development meetings.
- Vendor/contractor costs represent a total solution cost (i.e., including travel, hardware, software, networking, etc.). Vendor costs were given by vendors as high-level, unbinding estimates.
- Provider incentive payments have been requested on the CMS-37 report and were approximately $343 million for FFYs 2011-2018 (the program's first eight years). The amount of funding requested and approved each year for incentive payments for FFY 2020 and FFY 2021 was $8,930,673 (100% FFP).

This I-APDU requests $116,327 in 90% FFP for FFY 2020 Q4, $2,143,836 in 90% FFP for FFY 2021, and $1,621,457in 90% FFP for FFY 2022.

8 Cost Allocation Plan for Implementation Activities

NC Medicaid EHR Incentive Program

NC is not receiving funding from other sources at this time; thus, the 90/10 FFP cost allocation method is the only one that applies to the HIT Program. The below table shows the 90% FFP cost allocation on a quarterly basis.

As specified in the Office of Management and Budget Circular A-87, a cost allocation plan must be included that identifies all participants and their associated cost allocation to depict non-Medicaid activities and non-Medicaid FTEs participating in this project, if any.

There are no non-Medicaid activities to report in this IAPDU, or any other cost that must be cost allocated.

Table 24: Quarterly Incentive Program Administrative Costs (90% FFP) for FFY 2020, approved October 3, 2018

	FFY 2020				
State Cost Category - HITECH	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	**Total**
State Personnel	$ 401,229	$ 401,229	$ 401,229	$ 401,229	**$1,604,915**
Contracted State Staff	-	-	-	-	**-**
Vendors	$ 918,063	$ 918,063	$ 918,063	$ 918,063	**$3,672,250**
Hardware & Sofware Costs	$ 21,581	$ 21,581	$ 21,581	$ 21,581	**$ 86,326**
Direct Non-personnel Costs	$ 17,100	$ 17,100	$ 17,100	$ 17,100	**$ 68,400**
Total Costs	**$1,357,973**	**$1,357,973**	**$1,357,973**	**$1,357,973**	**$5,431,891**

Table 25: Quarterly Incentive Program Administrative Costs (90% FFP) for FFY 2021 (including funding approved as of July 17, 2019 and new request for funding for AHEC included in this IAPDU) and FFY 2022

	FFY 2021				
State Cost Category - HITECH	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	**Total**
State Personnel	$ 401,229	$ 401,229	$ 401,229	$ 401,229	**$1,604,915**
Contracted State Staff	-	-	-	-	**-**
Vendors	$ 302,100	$ 302,100	$ 302,100	$ 302,100	**$1,208,400**
Hardware & Sofware Costs	$ 21,581	$ 21,581	$ 21,581	$ 21,581	**$ 86,326**
Direct Non-personnel Costs	$ 17,100	$ 17,100	$ 17,100	$ 17,100	**$ 68,400**
Total Costs	**$ 742,010**	**$ 742,010**	**$ 742,010**	**$ 742,010**	**$2,968,041**
	FFY 2022				
State Cost Category - HITECH	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	**Total**
State Personnel	$ 386,374	$ 386,374	$ 386,374	$ 386,374	**$1,545,497**
Contracted State Staff	-	-	-	-	**-**
Vendors	-	-	-	-	**-**
Hardware & Sofware Costs	$ 1,890	$ 1,890	$ 1,890	$ 1,890	**$ 7,560**
Direct Non-personnel Costs	$ 17,100	$ 17,100	$ 17,100	$ 17,100	**$ 68,400**
Total Costs	**$ 405,364**	**$ 405,364**	**$ 405,364**	**$ 405,364**	**$1,621,457**

HIE

All HIE activities in this I-APDU are Medicaid-related and directly tied to assisting Medicaid providers in meeting the requirements of Medicaid transformation and Promoting Interoperability. While NC HealthConnex is a statewide HIE for all health care providers, the NC HIEA's focus is to continue to provide a public utility infrastructure that best supports Medicaid providers in adapting to state transformation efforts toward value-based, whole-person care, and in their desire to improve health care quality while meeting state and federal reporting requirements.

To this end, 92% of participants in NC HealthConnex as of October 2018 are enrolled Medicaid providers, and the NC HIEA's outreach and onboarding focus remains nearly exclusively on helping Medicaid providers onboard efficiently to meet their state-mandated reporting requirements, while equipping them with cost-free tools to meet Promoting Interoperability reporting requirements and qualify for the highest possible reimbursements under the new managed care structure.

North Carolina notes for CMS that some non-Medicaid providers will continue to be onboarded to the HIE simultaneously with the Medicaid provider onboarding effort described in this document by leveraging the annually recurring NC state appropriations for NC HealthConnex operations in FFYs 2019-2021. However, all HIE enhancement activities described herein are planned in coordination with NC Medicaid to be initially focused on and tailored to Medicaid provider needs. Specifically, FHIR-enablement, the consolidated CCD, and NC*Notify are aimed at supporting Medicaid transformation efforts, while integrated access to the NC Controlled Substances Reporting System and electronic orders and results with the State Laboratory of Public Health are directly tied to PI public health measures and improving care for Medicaid beneficiaries. HIE onboarding efforts described herein apply only to Medicaid providers. For these reasons, North Carolina believes that no cost allocation across other funding sources for these activities is warranted at this time.

9 Assurances, Security, Interface Requirements, and Disaster Recovery Procedures

Assurances, Security, and Disaster Recovery Procedures

NC DHHS confirms that it will adhere to the CMS required assurances identified from Federal regulations as marked below:

Procurement Standards (Competition/Sole Source)

- 42 CFR Part 495.348 ☑ Yes ☐ No
- SMM Section 11267 ☑ Yes ☐ No
- 45 CFR Part 95.615 ☑ Yes ☐ No
- 45 CFR Part 92.36 ☑ Yes ☐ No

Access to Records, Reporting and Agency Attestations

- 42 CFR Part 495.350 ☑ Yes ☐ No
- 42 CFR Part 495.352 ☑ Yes ☐ No
- 42 CFR Part 495.346 ☑ Yes ☐ No
- 42 CFR Part 433.112(b)(5) – (9) ☑ Yes ☐ No
- 45 CFR Part 95.615 ☑ Yes ☐ No
- SMM Section 11267 ☑ Yes ☐ No

Software & Ownership Rights, Federal Licenses, Information Safeguarding, HIPAA Compliance, and Progress Reports

- 42 CFR Part 495.360 ☑ Yes ☐ No
- 45 CFR Part 95.617 ☑ Yes ☐ No
- 42 CFR Part 431.300 ☑ Yes ☐ No
- 42 CFR Part 433.112 ☑ Yes ☐ No

Security and interface requirements to be employed for all State HIT systems

- 45 CFR 164 Securities and Privacy ☑ Yes ☐ No

9.1.1 HIPAA Compliance

NC DHHS requires its systems be fully HIPAA-compliant as mandated, including the Transaction and Code Sets Rule, Privacy Rule, Security Rule, as well as the National Provider ID and other rules that may be established. Contractors will be required to demonstrate HIPAA compliance.

9.1.2 Statewide Technical Architecture Compliance

Compliance with the North Carolina Statewide Technical Architecture (NCSTA) policies, standards and best practices as well as the all other Federal requirements and specifications as mentioned above, are mandatory for all solutions and implementations completed by this Department.

The NCSTA includes eight distinct technology domains including Application, Data, System Integration, Collaboration, Network, Security, Enterprise Management and Platform Domains. With NCTracks aligned with the CMS-defined MITA currently underway, the NC-MIPS application design addressed each of these domains separately during the design, development and implementation cycle.

9.1.3 Application & System Integration Domains

The NC-MIPS application components are implemented with an SOA and N-tier architecture design. The services infrastructure uses standards-based .NET elements that allow seamless service process integration and data sharing with other organizations and agencies. SOA is a well-suited framework for building an architecture that is flexible, agile, and able to take advantage of new technologies. The design lends itself especially well to application integration efforts due to its flexibility to accommodate both batch and real-time integration from external and internal systems.

Section 3 of the I-APD provides further details on the application and system requirements, but it can be noted here that the NC-MIPS application design considers the following as primary integration or interface points with other state and CMS applications:

- CMS R&A: The NC-MIPS application uses CMS defined messaging formats and the prescribed secure file transfer protocol to integrate with the CMS Registration & Attestation System.
- Provider Enrollment, Credentialing and Verifications Application: The Enrollment, Credentialing and Verifications Application (EVC) system serves as the authoritative source for the state's provider base information. This solution is currently running on a .NET/MS SQL Server architecture. The NC-MIPS application leverages the same technologies to establish real-time interfaces with the EVC database.
- MMIS: Once NCTracks is made operational, the NC-MIPS application will have a close coupling with its databases and will use secure ODBC/JDBC access methods.

9.1.4 Data and Security Domains

NC-MIPS utilizes a Microsoft SQL Server platform to take advantage improved integration, data processing and analysis. The design includes all data, at rest, in use, and in motion, to be protected from unauthorized access and unauthorized disclosure by multiple layers of the security structure. Stored data (at rest) will be kept in controlled-access buildings or rooms, where access is restricted to authorized users and all access events are logged. Where appropriate and authorized by design, stored data can also be encrypted to render unusable any data obtained illegitimately from the servers.

Direct server access will not be allowed to networked users; only authorized technical staff will be able to access the servers for support and maintenance purposes. Networked access to servers (data in use) will be indirect; users will first be authenticated by a tier of access control servers (authorization and authentication services) and requests for information (data, reports, etc.) will be fulfilled by middle-tier servers which will accept the queries and retrieve appropriately authorized data from the file and data servers.

Transmitted data (in motion) will be encrypted, either by message layer security or transport layer security (TLS). Messages can be directly encrypted by clients/users before transmission, or the transport itself can be encrypted using Virtual Private Network (VPN) or Transport Layer Security (TLS/SSL) methodologies. The intent will be to enable end-to-end consistency in the encryption technologies eliminating conflicting protocols, encryption keys and mechanisms. All encryption mechanisms will be FIPS 140-2 approved, such as the Federal Advanced Encryption Standard (AES). Data transmitted in response to authorized requests will be copies of the data/file/report; no single-copy, original source data will be transmitted.

User provisioning, authorization and access control for the NC-MIPS application is based on Roles Based Access Control design, Single Sign-on and User provisioning workflows.

9.1.5 Collaboration & Platform Domains

The NC-MIPS application is a web-based solution that complies with the Section 508 Web accessibility standards as well as W3C standards. The Section 508 compliance is measured through the use of HiSoftware's AccVerify compliance testing and reporting tool. W3C compliance is measured through the use of Adobe and Total Validator tools. For provider and public facing user interfaces, the NC-MIPS application is designed to be compatible with modern browsers whose usage exceeds 500,000 users nationally and at least two percent of the traffic to the NC DHHS home Web site. As of the writing of this document the top four browsers by market share include Internet Explorer, Firefox, Safari, and Google Chrome.

9.1.6 Network and Enterprise Management Domains

The NC-MIPS networked components are protected by intrusion detection and intrusion prevention technologies (e.g., network access control devices, firewalls, host intrusion prevention systems (HIPS)). Requirements include logs of network and server activities to be collected, stored and reviewed for anomalous or unauthorized activities.

Server administration includes change management (patches and system upgrades) and active monitoring of all processes and protection technologies 24 hours a day, 7 days a week.

For system failure and disaster recovery purposes, the design includes redundancy and fail-over capabilities where possible. All data storage devices are configured at a minimum RAID Level 5 configuration to facilitate the replacement of damaged storage units without loss of data. The design includes all databases and data stores to be fully backed up at least once a week with daily incremental back-ups during the week (depending on size/amount of the data). The backed-up data will be encrypted, and the back-up media will be stored off-site and rotated on a designed and tested pattern to ensure recoverability of the data. Servers, workstations, and storage media which reach out-of-service limitations will be deactivated and any internal storage media will be "wiped" clean and/or destroyed before external disposal.

The NC-MIPS solution was hosted by the CSC Albany Data Center, but for easier access and cost savings purposes, moved to North Carolina Information Technology Services (ITS) servers in 2013. Staff within the NC-MIPS Help Desk will utilize an incident response plan that details recognition of problems and authorized response activities to reduce the effects, control the spread, determine the root cause, and document the details of all detected incidents. The incident response plan will feed into the business continuity/disaster recovery plan if an incident, or several incidents, reaches the pre-determined threshold for initiating a plan to relocate to an alternate data center requiring the restoration of the most recent data backups.

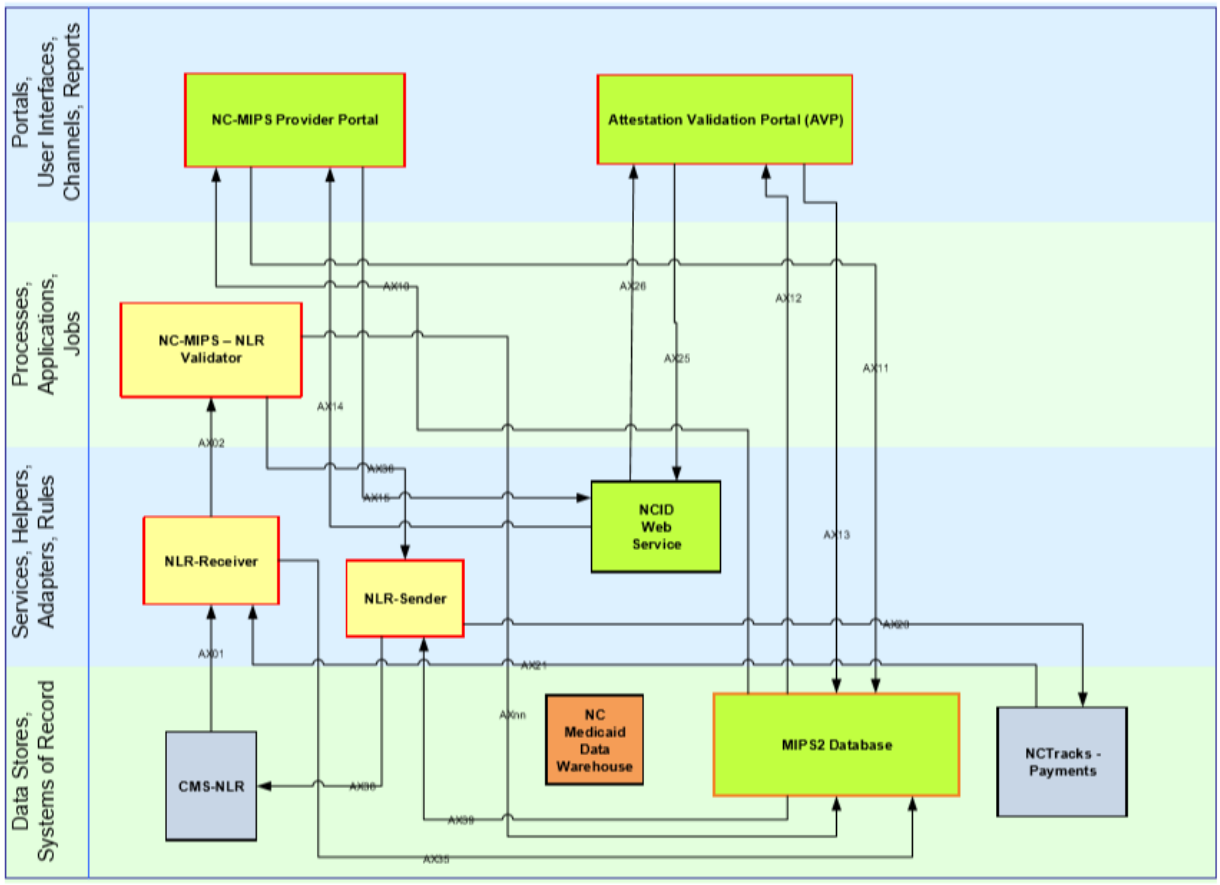
Interface Requirements

As depicted documented in the CMS "HITECH Interface Control Document," there are six interfaces between CMS and the state:

1. Interface B-6: CMS to state to send registration data;
2. Interface B-7: State to CMS for state to update CMS on registration status;
3. Interface C-5: CMS to state to send attestation information for dually eligible EHs;
4. Interface D-16: State to CMS to check for duplicate payments and exclusions;
5. Interface D-17: NLR to state to send dually eligible hospital cost report data;
6. Interface D-18: State to CMS to update CMS with state incentive payment data;

Extensible Markup Language (XML) is used as the communication protocol for interfacing with CMS through a Gentran mailbox. NC-MIPS also interfaces with the current EVC and will interface with NCTracks through web services. NC-MIPS accesses historical claims data from the legacy MMIS data warehouse (DRIVE) through asynchronous batch calls (or other comparable protocols). Relevant claims data fields are stored in the NC-MIPS database. NC-MIPS accesses data for sanctions or recoupments owed to the state via API calls or other comparable protocols.

Figure 6: NC-MIPS' system architecture components



Appendix A: MMIS Expenditures

This section details former budgets for the implementation phase of the NC Medicaid EHR Incentive Program.

Note that there is no MMIS funding request for FFY 2021-2022, as system and operations activities related to the NC Medicaid EHR Incentive Program were brought in-house to NC Medicaid during FFYs 2012-2013 and have been supported from FFY 2014 and beyond with HITECH funds.

The below is a summary of state and federal funding distribution.

The tables below summarize approved, expended, and remaining MMIS-only I-APD funds for FFYs 2011-2012.

Table 26: I-APD MMIS Funding Summary, FFY 2011

	Approved I-APD		
Activity Type	**State**	**Federal**	**Total**
State Personnel	64,645	581,809	646,454
System Hardware & Software	0	0	0
Supplies / Miscellaneous	650	5,850	6,500
Contract Personnel	31,680	285,120	316,800
Contract Services	400,915	3,608,231	4,009,146
Total Project Spend	**$497,890**	**$4,481,010**	**$4,978,900**
	I-APD Expenditures to Date		
Activity Type	**State**	**Federal**	**Total**
State Personnel	15,517	139,650	155,167
System Hardware & Software	0	0	0
Supplies / Miscellaneous	1,084	9,758	10,842
Contract Personnel	57,930	521,373	579,303
Contract Services	502,244	4,520,193	5,022,437
Total Project Spend	**$576,775**	**$5,190,974**	**$5,767,749**
	Remaining I-APD Funding		
Activity Type	**State**	**Federal**	**Total**
State Personnel	49,129	442,158	491,287
System Hardware & Software	0	0	0
Supplies / Miscellaneous	-434	-3,908	-4,342
Contract Personnel	-26,250	-236,253	-262,503
Contract Services	-101,329	-911,962	-1,013,291
Total Project Spend	**($78,885)**	**($709,964)**	**($788,849)**

Total project spend in FFY 2011, including HITECH and MMIS expenditures, was $6,240,511 (FFP $5,616,460 at 90%). OMMIS was not able to hire state staff as planned and instead saw overages in the areas of contract personnel and services.

Table 27: I-APD MMIS Funding Summary, FFY 2012

Activity Type	Approved I-APD		
	State	Federal	Total
State Personnel	261,006	2,349,056	2,610,062
System Hardware & Software	155,145	1,396,308	1,551,453
Supplies / Miscellaneous	5,000	45,000	50,000
Contract Personnel	52,930	476,373	529,303
Contract Services	55,333	498,000	553,333
Total Project Spend	**$529,414**	**$4,764,737**	**$5,294,151**
Activity Type	**I-APD Expenditures to Date**		
	State	**Federal**	**Total**
State Personnel	84	757	841
System Hardware & Software	2,880	25,916	28,796
Supplies / Miscellaneous	643	5,790	6,433
Contract Personnel	104,336	939,019	1,043,355
Contract Services	176,238	1,586,142	1,762,380
Total Project Spend	**$284,181**	**$2,557,624**	**$2,841,805**
Activity Type	**Remaining I-APD Funding**		
	State	**Federal**	**Total**
State Personnel	260,922	2,348,299	2,609,221
System Hardware & Software	152,265	1,370,392	1,522,657
Supplies / Miscellaneous	4,357	39,210	43,567
Contract Personnel	-51,406	-462,646	-514,052
Contract Services	-120,905	-1,088,142	-1,209,047
Total Project Spend	**$245,233**	**$2,207,113**	**$2,452,346**

Total project spend in FFY 2012, including HITECH and MMIS expenditures, was $3,315,286 (FFP $2,983,757 at 90%). OMMIS was not able to hire state staff as planned and instead saw overages in the areas of contract personnel and services.

The tables below summarize MMIS-only I-APD funds for FFYs 2013-2014.

Table 28: MMIS Budget – Contractor Personnel

	FFY 2013			FFY 2014		
Contractor Staff Title	**% of Time**	**Project Hours**	**Cost with Benefits**	**% of Time**	**Project Hours**	**Cost with Benefits**
NC-MIPS/NCTracks Project Manager	0.75	1,560	148,606	0.00	0	0
Operations Manager	0.40	832	80,622	0.00	0	0
Total	**1.15**	**2,392**	**$229,228**	**0.00**	**0**	**$0**

Table 29: MMIS Contractor Personnel Job Descriptions

Contractor Staff Title	Description of Responsibilities
NC-MIPS/NCTracks Project Manager	FFY 2013: Oversee NC-MIPS Operations Team and Help Desk FFY 2013-2014: Manage OMMISS and CSC relationship in relation to NC-MIPS/ NCTracks integration
Operations Manager	Provide overall management support and escalate appropriate issues to OMMISS and CSC executive management

Table 30: MMIS State Budget for FFYs 2013-2014

FFY 2013					
State Cost Category	**90% Federal Share**	**75% Federal Share**	**50% Federal Share**	**10% State Share**	**Total**
State Personnel	0	0	0	0	0
System Hardware	4,500	0	0	500	5000
System Software	4,500	0	0	500	5000
Training	0	0	0	0	0
Supplies	4,500	0	0	500	5000
Total Costs	**$13,500**	**0**	**0**	**$1,500**	**$15,000**
FFY 2014					
State Cost Category	**90% Federal Share**	**75% Federal Share**	**50% Federal Share**	**10% State Share**	**Total**
State Personnel	0	0	0	0	0
System Hardware	0	0	0	0	0
System Software	0	0	0	0	0
Training	0	0	0	0	0
Supplies	0	0	0	0	0
Total Costs	**$0**	**0**	**0**	**$0**	**$0**

Table 31: MMIS Contract Budget for FFYs 2013-2014

FFY 2013					
Cost Category	**90% Federal Share**	**75% Federal Share**	**50% Federal Share**	**10% State Share**	**Total**
Contract Personnel	206,305	0	0	22,923	229,228
Contract Services	613,805	0	0	68,201	682,006
Total Costs	**$820,110**	**0**	**0**	**$91,124**	**$911,234**
FFY 2014					
Cost Category	**90% Federal Share**	**75% Federal Share**	**50% Federal Share**	**10% State Share**	**Total**

FFY 2013					
Cost Category	**90% Federal Share**	**75% Federal Share**	**50% Federal Share**	**10% State Share**	**Total**
Contract Personnel	0	0	0	0	0
Contract Services	0	0	0	0	0
Total Costs	**$0**	**0**	**0**	**$0**	**$0**

For the reasons described in *Section 7* of this document, the total MMIS project cost for the items described in this document for FFYs 2013-2014 is $926,234 (FFP $833,610 at 90%). The $92,624 state share of this project will be satisfied with MMIS state appropriations and in-kind funding sources.

MMIS actuals for FFY 2013 were $435,997. MMIS actuals for FFY 14 through April 30, 2014 were $4,261.

No additional MMIS funding has been requested since 2014. After 2014, the needs of the program were best met with HITECH funds. The state continues to review State Medicaid Director Letters and will request MMIS funding if that source is determined to be the most appropriate for future work.

Appendix B: Estimates of Provider Incentive Payments by Quarter

Projected Medicaid Incentive Payments – 100% FFP HITECH Funding

The total payout of Medicaid incentives through April 17, 2020 was over $140 million to EHs and $213 million to EPs, and we estimate $3.4 million in incentive payouts per year in program years 2020-2021. These estimates are to be included in the CMS-37 report but may change depending on such variables as EP participation, readiness for Stage 3, and the impact of healthcare reform on the Incentive Programs. Estimates for 2020 and 2021 are based on trends from previous years. Note that while some of the number of incentive payments shown in the tables below are estimates, the numbers for FFY 2011-2020 and through May 19, 2020 reflect actuals.

Table 32: Incentive Payments by Number per Quarter

FFY 2011					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	1	1
EP	0	0	2	53	55
EP - Pediatric	0	0	0	0	0
FFY 2012					
	Q1	Q2	Q3	Q4	Total
EH	20	0	9	6	35
EP	194	555	281	537	1567
EP - Pediatric	16	24	17	12	69
FFY 2013					
	Q1	Q2	Q3	Q4	Total
EH	19	22	14	5	60
EP	494	607	718	370	2189
EP - Pediatric	24	11	23	17	75
FFY 2014					
	Q1	Q2	Q3	Q4	Total
EH	12	21	16	16	65
EP	534	606	788	360	2288
EP - Pediatric	18	6	28	33	85
FFY 2015					
	Q1	Q2	Q3	Q4	Total
EH	-2	35	27	7	67
EP	221	526	1334	197	2278
EP - Pediatric	3	2	47	18	70
FFY 2016					
	Q1	Q2	Q3	Q4	Total
EH	6	3	15	13	37
EP	94	206	1156	500	1956
EP - Pediatric	2	4	23	27	56
FFY 2017					
	Q1	Q2	Q3	Q4	Total
EH	0	1	10	3	14
EP	272	1118	1086	79	2555
EP - Pediatric	2	26	53	4	85
FFY 2018					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	1	1
EP	382	709	561	6	1658
EP - Pediatric	5	5	44	0	54
FFY 2019					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	2	862	253	0	1117
EP - Pediatric	0	44	12	0	56
FFY 2020					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	4	243	74	*15*	*336*
EP - Pediatric	0	3	1	*0*	*4*
FFY 2021					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	*3*	*200*	*50*	*200*	*453*
EP - Pediatric	*0*	*5*	*1*	*5*	*11*
Totals for FFYs 2011-2021					
EH					280
EP					16452
EP - Pediatric					565
Grand Total					17297

Table 33: Incentive Payment by Dollar Amount per Quarter

FFY 2011					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	275,226	275,226
EP	0	0	42,500	1,126,250	1,168,750
EP - Pediatric	0	0	0	0	0
FFY 2012					
	Q1	Q2	Q3	Q4	Total
EH	17,582,908	0	8,391,282	2,533,126	28,507,316
EP	4,122,500	11,793,750	5,971,250	11,411,250	33,298,750
EP - Pediatric	226,672	340,008	240,839	170,004	977,523
FFY 2013					
	Q1	Q2	Q3	Q4	Total
EH	12,870,317	15,596,546	8,539,106	3,724,893	40,730,862
EP	9,796,250	11,164,750	12,154,809	5,746,000	38,861,809
EP - Pediatric	289,008	138,837	266,341	198,339	892,525
FFY 2014					
	Q1	Q2	Q3	Q4	Total
EH	5,932,315	12,571,703	9,860,636	8,182,029	36,546,683
EP	7,140,806	7,730,136	10,790,750	5,418,750	31,080,441
EP - Pediatric	153,006	59,502	260,676	340,011	813,195
FFY 2015					
	Q1	Q2	Q3	Q4	Total
EH	-1,111,740	11,474,846	7,312,161	2,812,228	20,487,495
EP	2,962,250	6,587,500	15,023,750	2,962,250	27,535,750
EP - Pediatric	42,501	11,334	334,349	119,006	507,190
FFY 2016					
	Q1	Q2	Q3	Q4	Total
EH	4,429,160	1,492,144	2,849,969	3,515,677	12,286,950
EP	1,564,000	2,847,500	12,261,250	5,282,750	21,955,500
EP - Pediatric	28,334	39,668	138,841	170,009	376,852
FFY 2017					
	Q1	Q2	Q3	Q4	Total
EH	0	64,287	1,563,098	371,920	1,999,305
EP	4,224,500	11,849,000	12,533,250	709,750	29,316,500
EP - Pediatric	19,834	164,342	393,851	22,668	600,695
FFY 2018					
	Q1	Q2	Q3	Q4	Total
EH	0	0	46,355	0	46,355
EP	3,234,250	6,074,514	4,751,500	114,750	14,175,014
EP - Pediatric	28,335	28,335	249,348	0	306,018
FFY 2019					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	17,000	7,327,000	2,150,500	0	9,494,500
EP - Pediatric	0	249,348	68,004	0	317,352
FFY 2020					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	34,000	2,065,500	629,000	*127,500*	2,856,000
EP - Pediatric	0	17,001	5,667	*0*	22,668
FFY 2021					
	Q1	Q2	Q3	Q4	Total
EH	0	0	0	0	0
EP	*25,500*	*1,700,000*	*425,000*	*1,700,000*	3,850,500
EP - Pediatric	*0*	*28,335*	*5,667*	*28,335*	62,337
Totals for FFYs 2011-2021					
EH					140,880,191
EP					209,743,014
EP - Pediatric					4,814,018
Grand Total					355,437,223

Appendix C: Grants or Other Funding

There are currently no other funding sources for the program outlined in the request.

Appendix D: FFP for HIE

This appendix contains additional background information about the statewide HIE approach and the development and rollout of HIE in North Carolina, and references existing narrative in the NC SMHP, which may be helpful context for the request in this HIE I-APDU.

HIE Approach

Coordinated planning for statewide HIE in North Carolina began in early 2009, when the North Carolina HIT Strategic Planning Task Force (HIT Task Force) was established to forge a new vision of how health and healthcare can be improved by enhancing the use of health IT. Details on the statewide HIE approach can be found in Section B.2 on page 60 of the SMHP (Version 4.3; CMS approval letter dated 10032018). Note that the technology approach has not changed since the inception of the NC HIE.

Infrastructure Development and Transition to Ongoing Operations

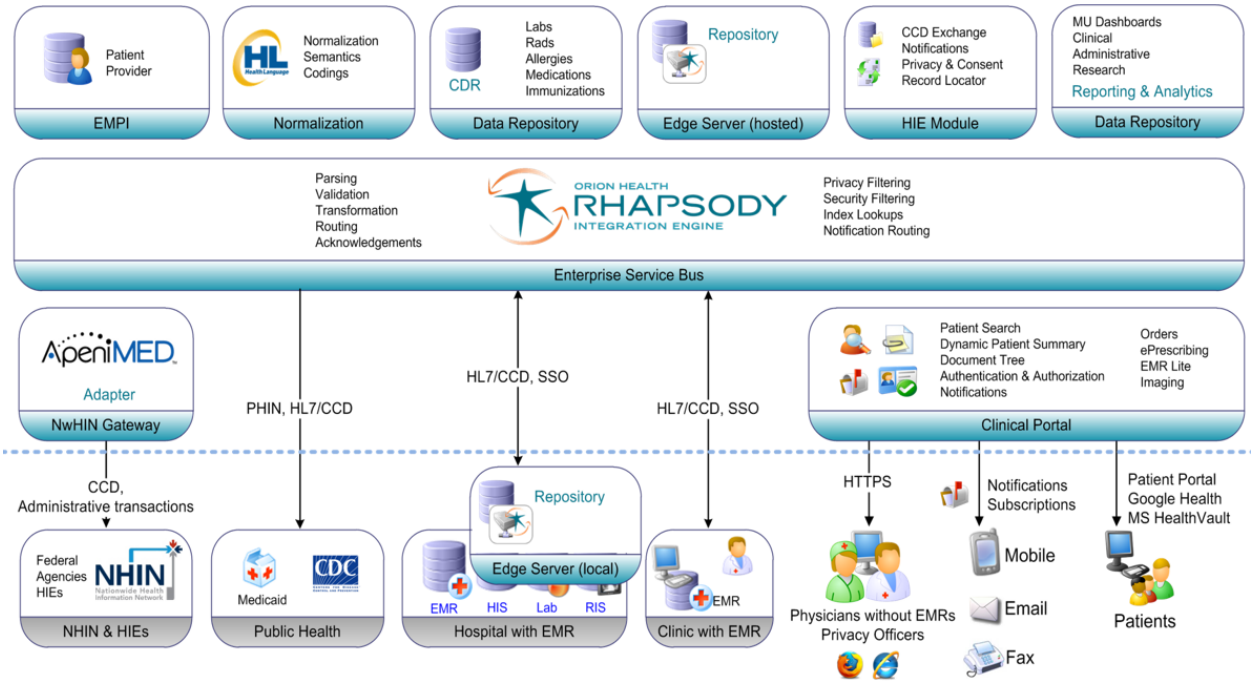
Based on intensive assessment, prioritization and planning facilitated by national subject matter experts and vetted through a public process, NC HIE developed and released an RFP for statewide HIE services on April 25, 2011.

In July 2011, NC HIE's Board approved the selection of CapGemini/Orion as NC HIE's technical services vendor. In August 2011, CapGemini/Orion and NC HIE began the formal design process. The initial implementation of core HIE services included:

- Connectivity with participating systems: CCD, HL7, SSO, Web Services (Rhapsody™);
- Privacy and consent services;
- Enterprise MPI;
- Data normalization;
- Public health reporting;
- User subscribed notifications;
- Clinical Data Repository;
- Web-based access to the longitudinal patient record (Clinical Portal);
- Direct secure messaging; and
- eHealth Exchange.

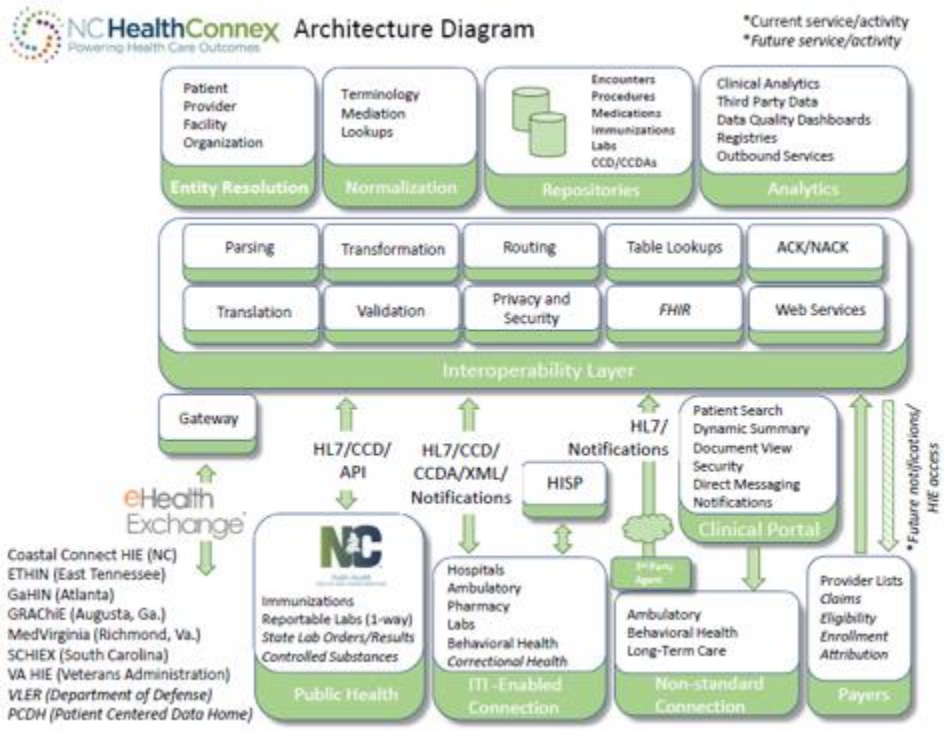
In December 2011, CapGemini/Orion defined and built interfaces and integration services to promote exchange of clinical messages between organizations. A visual representation of the initial design of core services and interactions is provided in the figure below.

Figure 7: NC HIE Core/Services/Interactions Design, 2011



In April 2012, NC HIE completed the development and initial deployment of HIE core services and launched its first phase of statewide HIE connectivity with the availability of secure messaging leveraging the Direct protocol. From April 2012 through 2016, the main technical focus of the HIE through two subsequent governance transitions has been building out additional facility connections. The figure below depicts NC HealthConnex's core services and interactions as of 2018, and those planned for delivery in 2019-2021. In April 2019, the NC HIEA migrated its HIE platform from Orion Health to the InterSystems HealthShare technology stack.

Figure 8: NC HealthConnex Current and Planned Core Services/Interactions



For more on plans for continued enhancements to NC HealthConnex infrastructure and services, see the *NC HIEA Roadmap 2021*.

Risks and Mitigation Strategies

Details on the HIE's risks and mitigation strategies can be found in Section B.2.4 on page 72 of the SMHP (Version 4.3; CMS approval letter dated 10032018).

An additional risk not mentioned in the SMHP for continued Medicaid public health onboarding and the HIE enhancement initiatives described herein is that external systems or organizations lack readiness, technical capacity/resources, or in some cases policy or authority to deliver on planned activities. An example of this is that the NCIR or CSRS has competing programmatic priorities.

The probability and impact of this risk is moderate to high, and the NC HIEA's mitigation strategy involves dedicating NC HIEA staff to careful planning and vetting of activities and project plans with all relevant stakeholders, and co-management of initiatives with regular project touchpoints.

Annual Benchmarks and Performance Goals

Details on annual benchmarks and performance goals for the statewide HIE approach through 2019 can be found in Section B.2.5 on page 74 of the SMHP (Version 4.3; CMS approval letter dated 10032018). The NC HIEA is pleased to report the following update on those stated goals from early 2017, in the table below. Additional goals for 2020-2021 have been added and will be included in the next SMHP update.

Table 34: NC HealthConnex Performance Goals and Progress to Date

Performance Goal	Metric	2016 Baseline	2018 Goal	2018 Actual	2019 Goal	2019 Actual	2020 Goal	2021 Goal
Expand connectivity to NC HealthConnex core services	Total # of facilities	835	5,000	4,502	7,500	5332	8,500	10,000
	Total # of hospitals	22	110	97	120	113	125	130
	Total # of health departments	23	85 (all)	63	85 (all)	72	85 (all)	85 (all)
Expand patient and provider base within NC HealthConnex	Total # of unique providers with contributed patient records in NC HealthConnex	19,744 (April 2017 actual)	TBD	41,568	65,000	TBD – Analytics Environment was paused 2018 and we anticipate having info in Q2 2020.	70,000	75,000
	Total # of unique patients with records in NC HealthConnex	3.5 million	8 million	6 million	10 million	9.8Million	10 million*	10 million*

**The state's population hovers around 10 million, so while the total # of unique patients will grow slowly thereafter due to movement in the population, the goal has not been set higher than 10 million.*

For additional performance goals, see the *NC HIEA Roadmap 2021*.

Link to Promoting Interoperability Strategy

For a crosswalk of 2020 (Stage 3) Promoting Interoperability objectives and NC HealthConnex supporting technology, see *Table 10* of this I-APDU.

Clinical Quality Measures and Public Health Interfaces

NC Medicaid's strategy for public health interfaces are described in Section B.2.7 of the SMHP (Version 4.5). status of public health system interfaces and relevant provider reporting capabilities with NC HealthConnex are also addressed in *NC HealthConnex and Promoting Interoperability* in this I-APDU.

Short- and Long-Term Value Propositions

Details on the value propositions for NC's statewide HIE approach can be found in Section B.2.8 of the SMHP (Version 4.3; CMS approval letter dated 10032018).

Role of State Government

NC DHHS has been intimately involved with the statewide HIE network from early planning under the state's Health and Wellness Trust Fund Commission in 2009-2010; to the creation of statewide HIE policy guidance—including the North Carolina Health Information Exchange Act and the development of the original statewide HIE participation agreement—in 2011; through continued collaboration with the NC Office of Health Information Technology (NC OHIT) and close coordination with NC Medicaid and the NC Division of Public Health; and finally through legislated full oversight and operational management since its transition under the state agency NC HIEA on February 29, 2016.

Stakeholder Investments

North Carolina's statewide HIE network has seen federal, state, private corporation, and participant contributions to its financial picture since its inception. Funding from early investors with limited investment periods (i.e., ONC through the State HIE Cooperative Agreement, CMS through HITECH funds) were leveraged for initial design and development costs. Funding from other initial investors with longer term benefit horizons (e.g., commercial insurers) will see their payment mechanisms adapt over time.

The initial financing strategy for NC's HIE after early funding had been exhausted was to shift to a services model, whereby participant fees would cover ongoing costs of the core services and any deployed value-added services/features, to be billed to participants based upon utilization or subscription. As described in *Appendix C*, with the transition of the statewide HIE network under the NC HIEA, the current funding makeup includes state appropriations, an infrastructure contribution from SAS Institute, and time-limited HITECH funding as approved through the HIE I-APD Version 2.0.

NC Medicaid is cognizant of the need to ensure other stakeholders join the State of North Carolina, SAS Institute, CMS and NC Medicaid in supporting the costs associated with sustaining statewide HIE services. As such, NC Medicaid worked closely with NC HIE and now, the NC HIEA, on both its initial funding approach and longer-term plans for financial support from stakeholders. The *NC HIEA Roadmap 2021* discusses plans for payer and patient access, both of which hold promise for significant future investment and cost-sharing in HIE ongoing operational costs. In 2019 and the first part of 2020, the NC HIEA contracted with each of the health plans who were selected to serve as managed care organizations for North Carolina's Medicaid population. Several of these organizations are working with the NC HIEA to monitor member activity across other, non-Medicaid lines of business.

Cost Allocation Methodology Used for Funding HIE Core Services and Features Development

The initial cost allocation methodology for funding HIE core services development from North Carolina's HIE I-APD Version #20120113 (CMS approval letter dated 03012012), is as follows (Note: "DMA" stands for the NC Division of Medical Assistance, the former name for the NC Medicaid agency):

In determining the proportion of initial HIE core services development that would be eligible for 90% FFP, DMA prioritized meeting the CMS cost allocation principles given that a range of other entities, including health plans, would benefit from statewide HIE.

DMA's goal was to identify the number of Medicaid providers within the state among those who are categorically eligible for the Medicaid EHR Incentive Program (e.g., doctors of medicine, doctors of osteopathy, nurse practitioners, certified nurse midwives and dentists). These data would serve as the denominator in the fair share ratio. In identifying the numerator, DMA sought to balance the number of providers that could eventually meet the Medicaid EHR Incentive Program's volume thresholds (20 percent

volume requirements for pediatricians, 30 percent volume for all other eligible professionals) with the lack of historical data that all states face in predicting enrollment in the program. Ultimately, DMA determined that the numerator needed to inclusive not just of those providers that already met Medicaid volume requirements but of those providers who could potentially meet these requirements over the next five years.

According to data from the American Academy of Family Physicians, the average family physician has 85 patient visits per week.[20] This is equivalent to 340 visits per month. Twenty percent of this volume (i.e., the volume threshold for pediatricians) would equal 68 visits or encounters. DMA felt that 68 visits was not sufficiently broad that it would reflect providers that would be eligible over five years, particularly with Medicaid expansion efforts and increased Medicaid payment rates as a result of the Affordable Care Act. Therefore, DMA determined that providers with 60 or more encounters per month should be included in the numerator.

In performing these calculations, DMA found that 20.8 percent of the state's providers met this volume threshold. Denominator data were obtained from DMA's MMIS as were numerator data. Data from the numerator took the average number of encounters over a three-month period to account for variability in patient volume in any one month.

While physician assistants (PAs) who practice in an FQHC or RHC that is so led by a PA are also eligible for the Medicaid EHR Incentive Program, DMA did not include these data in the denominator because encounter data for PAs are not available in the MMIS.

As stated in *Section 8* of this document, all activities described in the HIE I-APDU approved May 21, 2019 are directly tied to supporting NC HealthConnex participants (92% of whom are currently enrolled Medicaid providers) and CSRS participants (86% of whom are currently enrolled Medicaid providers) in the transition to value-based care, while meeting Promoting Interoperability requirements. Thus, North Carolina asserts that no cost allocation across other funding sources is warranted at this time for the HIE initiatives.

Long-Term Sustainability

In its first five years, NC's statewide HIE network saw slow adoption by providers and underwent major governance transitions. In September 2015, concerns about its sustainability combined with a need for greater visibility into Medicaid services for efficient program administration led the NC General Assembly to pass NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, which assigned the oversight and administration of the statewide HIE network to a new state agency called The North Carolina Health Information Exchange Authority (NC HIEA), and which mandated that providers of health care services paid for with state funds connect to and share clinical data with the statewide HIE network.

Rebranded NC HealthConnex in 2016, the statewide HIE network under the NC HIEA now has broad support from the NC legislature and key state health care leaders, who are depending on it to help reshape health care delivery and administration in North Carolina. NC HealthConnex operations are fully funded on an annually recurring basis in the NC state budget; the funding level is expected to remain constant through state fiscal year 2022 (June 30, 2022). The *NC HIEA Roadmap 2021* discusses plans for payer and patient access, which will be furthered by the 21st Century Cures Act. In addition to the NC HIEA's strong

[20] American Academy of Family Physicians. (2008). Average number of family physician visits per week and average number of patients in various settings, June 2008 [Table 5]. Accessed October 20, 2011 from: http://www.aafp.org/online/en/home/aboutus/specialty/facts/5.html

commitment to serving state-funded providers and beneficiaries and supporting NC DHHS, NC Medicaid, and other state agencies, the NC HIEA will look to gradually become receipt supported

Appendix E: Center for Medicare and Medicaid Services Seven Conditions & Standards

Yes ☑ **No** ☐ **Modularity Condition.** Use of a modular, flexible approach to systems development, including the use of open interfaces and exposed API; the separation of business rules from core programming; and the availability of business rules in both human and machine-readable formats.

Modularity in the Medicaid Electronic Health Record Incentive program is achieved in several ways:

- To adjust to the MMIS system replacement, a modular, decoupled approach was seen as necessary from the outset. The provider-facing NC Medicaid EHR Incentive Payment System (NC-MIPS) and back-end Attestation Validation Portal (AVP) are modular and separate from NC's MMIS to allow for fast updates as CMS changes are released for the program. NC-MIPS and AVP are maintained inhouse with program staff, so changes do not require the costly and time-consuming change request procedures for MMIS through CSRA, the fiscal agent for NC DHHS.
- The software is built using best practice design patterns such as separating the data, business, and presentation layers within the application.
- The solution leverages data from documented, well-defined interfaces to communicate with other systems (CMS R&A, enrollment/credentialing, payment, claims data, authentication, I certification number verification, etc.). Where possible, new technologies supporting more flexible interfaces (XML, web services, etc.) are used.
- Attestations, attestation validation, and meaningful use all benefit from leveraging metadata driven rules for processing.

For a software development life cycle, the key components of the NC-MIPS approach are to:

- Generate finalized business requirements through frequent short meetings between the business and development teams.
- Implement some SCRUM tactics to ensure a strong development process, avoid pitfalls commonly associated with the waterfall approach, and realize other benefits of agile development.

The NC HealthConnex solution uses documented interfaces and federal and industry standards for interoperability and modularity. The NC HealthConnex platform is composed of components capable of standing alone and/or replacement as necessary. The components are coupled via industry-standard interfaces that include but are not limited to healthcare messaging transactions, web services, and even batch processing where required. Our approach to the development of new services is open, collaborative, and based on an agile industry-standard Systems Development Life Cycle (SDLC). Business use cases are developed in direct collaboration of active HIE participants and future participants, as well as healthcare business, technical, compliance and policy stakeholders. These use cases are distilled into requirements, which are distilled again into technical use cases that drive the development of modules. NC HealthConnex's quality assurance process is comprehensive and reengages the appropriate stakeholders as modules are assembled into services; these services are tested in a protected environment, and then methodically rolled out to HIE participants.

Yes ☑ **No** ☐ **MITA Condition.** Align to and advance increasingly in MITA maturity for business, architecture, and data.

As a decoupled solution relying on data mastered in multiple other systems, the Medicaid Electronic Health Record Incentive Solution is architected to participate as a data consumer and producer within a larger service-oriented architecture. The solution aligns with the state's MITA goals.

The NC HealthConnex solution uses documented interfaces and federal and industry standards for interoperability and modularity. The NC HealthConnex platform is composed of components capable of standing alone and/or replacement as necessary. The components are coupled via industry-standard interfaces that include but are not limited to healthcare messaging transactions, web services, and even batch processing where required. Our approach to the development of new services is open, collaborative, and based on an agile industry-standard Systems Development Life Cycle (SDLC). Business use cases are developed in direct collaboration of active HIE participants and future participants, as well as healthcare business, technical, compliance and policy stakeholders. These use cases are distilled into requirements, which are distilled again into technical use cases that drive the development of modules. NC HealthConnex's quality assurance process is comprehensive and reengages the appropriate stakeholders as modules are assembled into services; these services are tested in a protected environment, and then methodically rolled out to HIE participants

Yes ☑ **No** ☐ **Industry Standards Condition.** Ensure alignment with, and incorporation of, industry standards: the Health Insurance Portability and Accountability Act of 1996 security, privacy and transaction standards; accessibility standards established under section 508 of the Rehabilitation Act, or standards that provide greater accessibility for individuals with disabilities, and compliance with Federal civil rights laws; standards adopted by the Secretary under section 1104 of the Affordable Care Act; and standards and protocols adopted by the Secretary under section 1561 of the Affordable Care Act.

Taking advantage of industry standards is a key goal of the Medicaid Electronic Health Record Incentive Solution. Attention to industry standards is specifically included in all phases of the software development process including requirements gathering/design, development, system integration testing, and user acceptance testing. Particular attention is being paid to section 508 of the Rehabilitation Act. No software will be released without achieving compliance for the user interface. Each failure to comply with an applicable standard will result in a critical bug being logged for immediate remediation.

NC HealthConnex incorporates industry standards set by the Secretary of HHS to meet interstate agency interoperability, accessibility, and security requirements in all project phases. This implementation is hosted in a state-of-the-art data center in the continental U.S. We ensure HIPAA compliance through standard quality assurance and compliance processes enforced at all levels of the project and monitored by the project sponsors. The State Medicaid Agency complies with the Affordable Care Act Section 1104, Administration Simplification and Section 1561, Health IT Enrollment Standard and Protocols. All vendors engaged with the HIE have long and successful histories working with CMS concerning 508 standards, take care to design their products to meet 508 requirements, and provide necessary product assessment statements. NC HIEA is planning to become Health Information Trust Alliance (HITRUST) certified in 2020 and plans to maintain certification year to year.

Yes ☑ **No** ☐ **Leverage Condition.** Promote sharing, leverage, and reuse of Medicaid technologies and systems within and among states.

North Carolina's Medicaid Electronic Health Record Incentive Solution was built to both leverage capabilities from other states and to be leveraged by other states. We also have been using CMS's program portals to review material from other states. North Carolina's approach to attestation validation and reporting may be of interest to some states.

NC HealthConnex utilizes and extends federally-sponsored interoperability standards. It is built to both leverage capabilities from other states and to be leveraged by other states to engage in the meaningful exchange of critical healthcare information. The foundational technology and standards by which NC HealthConnex has not fundamentally changed since its inception; it is the convergence of interoperability standards, alignment of legal agreements (e.g., the DURSA), and shared experiences and services that provide the true value. To that end, the project team openly collaborates with state agencies (i.e. Division of Public Health) and several state-level and regional HIEs to both learn from and contribute to the resolution of common challenges. We engage in discussions at local, regional, and national conferences with respect to the same. We actively engage our present and future participant population in the responsibilities of and value to be gained from the exchange of health information, and how such collaboration helps prepare them for the transition to managed care and value-based purchasing arrangements.

Yes ☑ **No** ☐ **Business Results Condition.** Support accurate and timely processing of claims (including claims of eligibility), adjudications, and effective communications with providers, beneficiaries, and the public.

A guiding principle in developing the Medicaid Electronic Health Record Incentive Solution was to have clear communication with the provider community on requirements and status. A second principle is to reduce the administrative time for processing attestations through bringing together the disparate data sets required for attestation validation, providing the ability to monitor the overall attestation validation process, and allowing flexibility in data capture during validation to support process management and improvement.

NC HealthConnex does not directly support the adjudication and processing of claims, nor does it affect the confirmation of eligibility at this time. It does, however, enable near real-time exchange of healthcare information between providers and allows providers to consume that information in a variety of ways. In so doing, it influences outcomes to the betterment of Medicaid beneficiaries and the public at large, reduces costs, and reduces duplicative testing and medical errors. It also enables direct, secure communication between providers to assist in referrals, transitions in care, and other health-related inquiries, and reduces the complications of largely manual workflows and the risks associated with paper-based

Yes ☑ **No** ☐ **Reporting Condition.** Produce transaction data, reports, and performance information that would contribute to program evaluation, continuous improvement in business operations, and transparency and accountability.

The approach to North Carolina's Medicaid Electronic Health Record Incentive Solution is consistent with the more recent best practices of building the monitoring and support of the solution into the solution itself. By maintaining a centralized activity log, the solution can provide stakeholders (providers, management, and program operations) insight into current or historical activity. A separate audit log maintains detailed information that can be used for troubleshooting or performance analysis. Together, both logs may be used for reporting metrics or derived key performance indicators allowing SLAs to be monitored and corrective actions to be developed as necessary.

NC HealthConnex currently produces reports that speak to the performance of the various layers of the HIE infrastructure. It can provide stakeholders (providers, health care and health plan management, and program operations staff) insight into current or historical activity at a global, participant, and even a transactional level. Each module maintains a separate audit log of detailed information that can be used for troubleshooting or performance analysis. In addition, NC HealthConnex plans to offer data quality reporting that will offer participants in the HIE valuable insight into the richness and relevance of their healthcare data. Over time, this programmatic approach will lead to better data, more actionable data and workflow and programmatic improvements within clinical settings.

Yes ☑ **No** ☐ **Interoperability Condition.** Ensure seamless coordination and integration with the Exchange (whether run by the state or federal government), and allow interoperability with health information exchanges, public health agencies, human services programs, and community organizations providing outreach and enrollment assistance services.

North Carolina's Medicaid Electronic Health Record Solution is designed and executed with reuse in mind. It is intended to be a system with suitable exposure to multiple enterprise service buses, including but not limited to the NC Division of Department of Health and Human Services buses.

As a Health Information Exchange (HIE), NC HealthConnex's primary function is to enable the timely exchange of healthcare information between providers. To meet a connectivity mandate set forth in NC state law, NC HealthConnex must accept data from and send data to several dissimilar technologies using a variety of standard and non-standard methodologies. We integrate federal and state-level entities and ensure interoperability between them and local and regional HIEs, public health entities, hospitals, integrated delivery networks, behavioral health organizations, and other types of participants who wish to connect. We provide outreach, technology, and technical assistance services to ease the burden and cost of entry for less-enabled provider organizations and continue to contemplate intuitive ways for our participants to access value-added features that seamlessly integrate into their clinical workflows.

Appendix F: Acronyms and Abbreviations

Acronyms and Abbreviations	
A/I/U	Adopt, Implement, or Upgrade
API	Application Programming Interface
ARRA	American Recovery and Reinvestment Act
AVP	Attestation and Validation Portal
BAA	Business Associate Agreement
CMS	Centers for Medicare and Medicaid Services
CSC	Computer Sciences Corporation
NC DHHS	North Carolina Department of Health and Human Services
DHB	Division of Health Benefits (NC Medicaid), formerly Division of Medical Assistance
DRIVE	Former MMIS Data Warehouse
EH	Eligible Hospital
EHR	Electronic Health Record
EP	Eligible Professional
EVC	Enrollment, Verification, and Credentialing
FFP	Federal Financial Participation
FFY	Federal Fiscal Year
HIE	North Carolina Health Information Exchange

Acronyms and Abbreviations	
HIPAA	Health Insurance Portability and Accountability Act
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
I-APD	Implementation Advance Planning Document
IC	Informatics Center
ITS	North Carolina Information Technology Services
MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information System
MS SQL	Microsoft Structured Query Language
MU	Meaningful Use
MU^2	Meaningful use of Meaningful Use
NC AHEC	North Carolina Area Health Education Center
N3CN	North Carolina Community Care Networks
NC-MIPS	North Carolina Medicaid Incentive Payment System
NCTRACKS	NC Transparent Reporting, Accounting, Collaboration, and Knowledge Management System
NLR	National Level Repository
OMMISS	Office of Medicaid Management Information System Services
ONC	Office of the National Coordinator
ORH	Office of Rural Health
P-APD	Planning Advanced Planning Document
PCG	Public Consulting Group
REC	Regional Extension Center
SMD	State Medicaid Director
SME	Subject Matter Expert
SMHP	State Medicaid HIT Plan
SOA	Service Oriented Architecture
XML	Extensible Markup Language